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THE

NATURALIST:

A

MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

WM. DENISON ROEBUCK, F.L.S.,

RECORDER TO AND EX-PRESIDENT OF THE CONCHOLOGICAL SOCIETY, AND HON. SECRETARY OF THE YORKSHIRE NATURALISTS' UNION, &C.;

WITH THE ASSISTANCE IN SPECIAL DEPARTMENTS OF

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McCORQUODALE & CO. LIMITED, CARDINGTON STREET, EUSTON;

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PREFACE.

THE Editors take the opportunity afforded by the completion of another year's volume to thank their contributors for the notes and articles which have served to maintain the variety and utility of character of the contents of the volume, and their subscribers for the generous and appreciative support which a journal like 'The Naturalist,' definitely limited in its scope to a given tract of country, always needs.

The Editors trust that in future volumes they may be favoured with a greater amount of contributions from the counties which a reference to the classified index will show have not of late received adequate attention.

No. 174. JANUARY 1890.

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BOOKS RECEIVED.

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THE NATURALIST
For 1890.

CAUSE OF THE COLORATION OF RED SANDSTONES.

T. MELLARD READE, F.G.S.,
Park Corner, Blundellsands, Liverpool.

WHILE walking along the shore at Hightown my attention was called by one of my sons to several small patches of red sand which occurred among the ordinary light yellow sand of the sand-dunes.

The face of the sandhills at this point is nearly vertical, having been cut into by the sea. The patches in question were so unusual, and looked so exceedingly like disintegrated Triassic sandstone that we were all much interested. On digging out a portion of the red sand at two places, we found that on the top of one of the patches was a large iron nail, and on the other several small ones much rusted. It is evident that the coloration was produced by the oxidation of these nails, the remarkable fact being the uniformity of tint given to the sand below and its redness.

An examination with the microscope showed that the grains, like those of our Triassic sandstones, were more or less coated with a pellicle of peroxide of iron. Some were a light translucent pink, others a darker pink, while a few of the grains appeared a very dark brown, the general effect being a pinky red.

I consider this an interesting illustration of how our red Triassic Sandstones may in many cases owe their coloration to percolation of water holding ferrous oxide in solution. It shows that a deposit of peroxide of iron may in this way take place on the individual grains in a tolerably uniform manner.

Mr. Israel Russell has, in a very interesting and valuable memoir, published by the U. S. Geological Survey (Bulletin, No. 52, 1889), given reasons for believing that the Red Rocks of the Newark System, which includes the Trias, Jura, and Jura-Trias, are sediments derived from the residual deposits left by the sub-aerial decay of rocks containing hornblende, mica, chlorite, garnets, and pyrites, etc.

The oxide of iron arising from the decomposition of these minerals colours the residual deposits a deep red, and Mr. Russell considers that the red rocks of the Newark System are these deposits aqueously re-arranged. Nature does not, however, always

perform her work in the same way, and from the great abrasion most of the grains of the red rocks of the Trias of Lancashire and Cheshire have undergone, I am inclined to believe that the coloration must in many cases have been subsequent to the sedimentation.

The well-known porosity of these sandstones lends itself to this explanation. One cubic foot of Runcorn Stone will hold three quarts of water, and I have shown in a demonstration at the Liverpool Architectural Society that a solid sandstone syphon may be made that will empty one vessel of water into another by simple capillarity. Colouring matter may have been introduced in this way by the circulation of water containing iron in solution. In other cases, no doubt, colouring matter may have been introduced simultaneously with the sediment.

NOTES—ORNITHOLOGY.

Long-tailed Duck inland in Northumberland.—The above heading is not intended to call attention to the presence of this bird as a Northumbrian bird, because it is common enough during winter *on the coast*, but as on October 30th ult. I happened to come across it some thirty-five miles inland, on a sheet of water near Haydon Bridge in Northumberland, I think the fact of sufficient interest to send to this journal.

I have no doubt the bird, which was a female, had been driven out of its course, the wind during the previous night having blown very hard from the S.W. I have never before known or heard of this bird being found inland in Northumberland. And on the same sheet of water where it was busy diving when I noticed it, I shot a pair of Tufted Ducks (old female and an immature bird) on September 9th ult. Golden-Eyes, Mallard, and Teal also frequent this pool. I noticed Redwings in numbers on 30th ult., having heard them shrieking overhead in the darkness at midnight on the sea-coast several nights before. On October 5th I was struck with the prodigious number of Blackbirds, mostly cocks, whilst shooting in turnip-fields in Northumberland. No doubt they would be new arrivals.—ALFRED C. CHAPMAN, Roker, Sunderland, Nov. 1st, 1889.

The Two-barred Crossbill in Lincolnshire, etc.—I am indebted to Mr. Gätke for the following information in connection with the occurrence of *Loxia bifasciata* (C. L. Brehm) in Heligoland, in the autumn of 1889:—

'Common Crossbills in plenty, mixed, or rather followed, by the white-winged species (*L. bifasciata*). It has not been obtained here for many years. I stuffed three old vermilion males, one yellow male, two old grey females with bright yellow rump, and an interesting young bird in the first complete plumage—grey and black, striped on the rump, white, with black stripes.

'The dates of their appearance are—August 14th, two, male and female, stuffed; a few more seen. September 1st, six; 15th, several seen, one caught; 16th, the same; 18th, three red, one grey, caught; 22nd, six, caught three—were altogether about fifteen, and greatly more than that number seen. Several were put in cages, and went to wreck and ruin, or were sold alive to the summer visitors.'

I have now before me a Lincolnshire example that was shot at South Cockerington, between Louth and the coast, in the autumn of this year, and taken in the flesh to Mr. Kew of the latter place, for preservation. It is a remarkably fine adult male bird. Comparing it with a skin of *L. leucoptera*, kindly lent me by Mr. Gurney, the wings, tail, and scapulars are quite as black as in the American bird, the bright parts are inclined to *vermilion*, but in *L. leucoptera* they are distinctly *rose-red*, without any trace of that colour. In the western species also the beak is considerably weaker than in the European bird, and not so deep at the base.—JOHN CORDEAUX, Great Cotes, Ulceby, Nov. 7th, 1889.

Naturalist,

REPORT OF THE YORKSHIRE MARINE ZOOLOGY COMMITTEE;

Presented to the Yorkshire Naturalists' Union, Nov. 20th, 1889.

J. PERCY A. DAVIS,
Halifax; *Hon. Secretary to the Committee.*

SINCE his appointment to the Committee for the investigation of the Marine Zoology of the Yorkshire coast, a branch of research which has not hitherto received the attention it deserves, the Secretary has had pleasure in taking part in two excursions: the first a dredging expedition from Scarborough northwards up the Yorkshire coast to Whitby on the occasion of an excursion of the Yorkshire Naturalists' Union; and the second at Filey, an excursion arranged by the Leeds Naturalists' Club. On the first occasion, by the kind permission of Major Woodall, the Committee were allowed the use of that gentleman's yacht and dredging tackle, and four members of the Union partook of the opportunity afforded them. The sea was anything but calm, and consequently did not add much to the dredging facilities. The trawl was an ordinary fishing-net, and perfectly inadequate to the purpose, it being impossible to land anything but large objects. Four casts were made, the depth varying from twenty to thirty fathoms. The first brought up fish, amongst which were Haddock, Plaice, Dabs, and other smaller species, with a few Echinoderms, but a peculiar absence of Protozoa was noticed. In the second cast there were fewer fish, more Echinoderms of the common species *Echinus sphæra*, some Protozoa, and a few crustacea, i.e., the Common Shrimp (*Crangon vulgaris*), Spider Crab (*Maia squinado*), Hermit Crab (*Pagurus bernhardus*), and the Common Starfish (*Uraster rubens*). The third haul was almost identical with the second, with the addition of a large female Dog Crab (with spawn), and a small Skate. The fourth and last proved rather disastrous to the tackle, the net catching a piece of wreckage, which tore it from end to end. Nevertheless, a large number of sea anemones were got up. They were perfectly white, this being due to the depth from which they were dredged. A few crustacea were found, but no fish or Protozoa. Considering the appliances which they had at their disposal, the Committee were fairly well satisfied with the day's work.

On the 14th of September, the Secretary, at the invitation of Mr. Addyman on behalf of the Leeds Naturalists' Club, took part in an excursion at Filey. The members were divided into two parties,

Mr. Addyman taking the lead of a dredging party, and the writer of a second to explore the Brig.

Mr. Addyman reported the following:—A small Shanny (*Blennius pholis*) was taken in the dredge. Two species of *Asteroides* were obtained, the Sand Star (*Ophiura albida*) and the Brittle Star (*Ophiothrix fragilis*), both of which exist on this coast. Several crustaceans were obtained, the most notable amongst which was the Acorn Barnacle (*Balanus balanoides*). An interesting specimen obtained was a minute Spider Crab (*Maia squinado*), whose body was only an eighth of an inch in diameter, but whose limbs were quite three-quarters of an inch in length. Many molluscs, all of them common, were dredged. The Hydrozoa and Polyzoa were of ordinary species, including *Sertularia* and *Hydractinia*.

On the Brig a number of shells, all of common species, were found:—*Littorina littorea*, *L. littoralis*, *L. rudis*, *Trochus cinereus*, *Chiton fascicularis*, *Tellina tenuis*, *T. solidula*, *T. fabula*, *Saxicava rugosa*, *Mactra subtruncata*, *M. stultorum*, *M. solida*, *Venus striata* (with Whelk borings), *Solen ensis*, and others. The eggs of *Purpura*, Skate, Dogfish, and Whelk were obtained, also the Brittle Star (*Ophiothrix fragilis*), and the Sand Star (*Ophiura albida*) were taken. Of the fish the One-spotted Goby (*Gobius unipunctatus*), the Black Goby (*Gobius niger*), and very young specimens of Gurnard (*Trigla*, species) were captured, and the Shanny or Smooth Blenny (*Blennius pholis*) was seen, but escaped. Of the Crustacea the Common Shrimp, Sandhopper (*Talitrus locusta*), Hermit Crab (*Pagurus bernhardus*), Spider Crab (*Maia squinado*), and many other species of crabs were seen or captured. The only anemone found was the common *Actinia mesembryanthemum*. As the parties returned from their respective expeditions, a Common Tope (*Galeus canis*) was observed on the shore. It was 4 ft. 6 in. in length, and had been caught by fishermen in the bay during the same afternoon. This fish has previously been obtained near Scarborough and Bridlington Bay, but has not hitherto been recorded from Filey. Altogether, a very pleasant day was spent, and not absolutely without reward. During the summer the Secretary has been staying on the Yorkshire Coast, and hopes after a time to furnish a full list of the mollusca of Bridlington Bay. By next season it is very desirable that proper dredging appliances be procured; it is impossible to obtain any of the small organisms in an ordinary fishing-net.

Many other objects have been obtained. They have not yet been named, but await identification by specialists, and it is hoped by the next annual meeting of the Union that the Committee may be able to present a more substantial report.

Naturalist,

ORNITHOLOGICAL NOTES FROM THE HUMBER DISTRICT, IN THE AUTUMN OF 1889.

JOHN CORDEAUX, M.B.O.U.,
Great Cotes, Ulceby, Lincolnshire.

Two-barred Crossbill (*Loxia bifasciata*). An adult male shot at South Cockerington near Louth, as recorded in the present number of *The Naturalist*, 1890, p. 14.

Turnstone (*Strepsilas interpres*). I have seen a pair at intervals through the summer on some fittie land in the parish of Stallingborough. They were not in mature plumage.

Oyster-catcher (*Hæmatopus ostralegus*). Two have been seen near this same place, either together or single, to the end of June.

Whimbrel (*Numenius phæopus*). July 9th, first on return journey.

Teal (*Querquedula crecca*). Mr. G. H. Caton Haigh informs me that considerable numbers were seen at Tetney on this date.

Greenshank (*Totanus canescens*). August 8th, first observed. Have been by no means uncommon in August and September on the coasts of the Humber.

Redpole (*Linota rufescens*). Occurs usually in small numbers as an Autumn migrant, but of late years has also bred regularly in this parish (Great Cotes) and district, and is becoming quite common.

Curlew (*Numenius arquata*). August 10th, in considerable numbers, birds of the year, on the coast and sea-marshes.

Black Tern (*Hydrochelidon nigra*). August 28th, saw an adult bird on the wing along the shore near Tetney Haven; it is the only one, old or young, I have seen this autumn.

Sand-Grouse (*Syrrhaptes paradoxus*). August 28th, a pair, supposed to be male and female, the former in very fine plumage, were seen to-day in a field on the Stallingborough Kiln Farm, near the Humber. The field was half under cultivation in peas, the remainder fallow. I went, subsequently, to look at the place, and found it just as my informant, George Skelton, had said. He was watching for Wood-pigeons, and saw the birds

close to him, and afterwards put them up, when they flew off, calling at the time. Skelton, whom I have known for many years as a coast-shooter, is well acquainted with Sand-Grouse, having shot them in 1863, and again in 1888. He is a grandson of old Skelton, the decoy-man, and was born at Friskney, and assisted, as a boy, in the old decoy at Dersingham, Norfolk.

Knot (*Tringa canutus*). August 29th, five to six hundred in a very compact flock on the Humber muds. I had a long look at them from the embankment with a telescope; all seemed young birds of the year, with buffish breasts, and it was evident they were a fresh arrival on the coast. On the 31st I was fortunate in seeing a flock of twenty-five to thirty Knots, in summer plumage, on the wing, along the coast near Theddlethorpe. They had exactly the appearance of a small red cloud drifting over the sea.

Sandwich Tern (*Sterna cantiaca*). Fishermen have reported extraordinary numbers on the wing with other Terns, at sea. On August 31st, I saw several flocks of Sandwich Tern come in, at low water, to rest on one of the sand-banks off the coast, to which I had walked and waded out. Some were birds of the year, black-spotted; the majority, adults; lovely birds, seen at fairly close quarters through a glass. They had, however, quite lost the salmon-pink of the under side. Their cry is loud and grating. I saw several Arctic and Common Tern during the day.

Arctic Skua (*Stercorarius crepidatus*). August 31st, several seen to-day off the coast, or beating to and fro above the sand-banks, without exception young birds in the dark-brown plumage of immaturity. They were very graceful and active on the wing; very considerable numbers have been reported, and several brought in to the bird-stuffers. A young Arctic Skua, shot on the Humber waters, which I saw in the flesh, had the head, neck, and breast a pale cinnamon, with narrow streaks of brown down the shaft of each feather.

Sanderling (*Calidris arenaria*). I saw a few on August 28th, and numerously on the 31st, along the coast between Mablethorpe and Saltfleet.

Storm Petrel (*Procellaria pelagica*). August 20th, a pair seen at sea off Spurn about this date, fluttering and beating for food round a fishing-boat at the time the men were hauling in their crab-pots. This is a very early occurrence.

Redstart (*Ruticilla phœnicurus*). Between September 5th and 9th, with easterly winds, there was a large arrival of small immigrants, both at the Spurn and on the Lincolnshire coast, Redstarts being very abundant, also Wheatears, Pied Fly-catchers, Yellow Wagtails, Meadow Pipits (swarming), Reed Buntings (numerous), and first flights of Thrushes.

Wryneck (*Iynx torquilla*). Received the wings of one killed against the lantern of the Newarp Light-vessel on September 8th. Mr. Haigh saw one on the coast near North Cotes on the 9th and 10th.

Titmice (*Parus major* and *P. cæruleus*). From the middle of September and throughout October there have been large additions to our local birds—bright, clean-looking birds. Very many of both near the coast in Yorkshire and Lincolnshire; also a few *Parus ater*.

Jack Snipe (*Gallinago gallinula*). September 20th: saw the first to-day.

Great Spotted Woodpecker (*Dendrocopus major*). Mr. Gätke, writing under date October 22nd, from Heligoland, says: 'more *Picus major* were seen than ever before; latterly, a few Jays turned up, and some *Parus ater*; all signs of an Eastern immigration. I should not wonder if Mealy Redpoles were to appear, followed by *Pyrrhula major* (the fine Eastern bird) and Wax-wings, but all depends on the weather.' Mr. Philip Loten, of Easington, has heard of about a dozen *P. major* as seen or obtained near the Holderness coast; six of these I have seen, all young birds, with the crown of the head more or less red. I have heard of others, seen or obtained near the coast of Lincolnshire, amongst them a fine adult male, shot near Mablethorpe on October 22nd, and taken to Mr. Kew, of Louth.

Spotted Crake (*Porzana maruetta*). Numerous during September and October all over the district. I have seen a considerable number at the bird-stuffers' shops—the greater proportion being birds of the year. Three, all immature, were obtained near Spurn. The Spotted Crake is known to breed in at least two localities in North Lincolnshire. We have considerable additions to the local birds in the autumn, and it is not improbable that any birds bred in the district leave at that season.

Grey Phalarope (*Phalaropus fulicarius*). Oct. 1st, one, which I have, was shot from a fresh-water pool near the sea embankment in the parish of North Cotes. It is an adult in winter plumage, and from its size probably a female.

Dusky Redshank (*Totanus fuscus*). One seen by Stubbs (the Plover-netter) on the fitties at Tetney, on October 2nd. Another, an adult in full winter plumage, was subsequently obtained. Our salt-fitties are a very favourite haunt of this somewhat rare bird, in the autumn.

Ruff (*Machetes pugnax*). One taken in the flight-nets at Tetney early in October, and subsequently two more between the 5th and 22nd.

Lapwing (*Vanellus vulgaris*). October 9th, wind W. (6 to 7), flights passing over Great Cotes at short intervals, from 9 a.m. to 1 p.m., from S.S.E. to N.N.W. On November 6th, Mr. Haigh observed a large immigration of Lapwings over Grainsby Park; also Wood Pigeons and Fieldfares, the last in flocks of fifty to one hundred, at intervals all day, to W. The Plover, also in the same direction, but chiefly in the morning.

Siskin (*Chrysomitris spinus*). October 12th, I observed one adult male in a hedge near the highest part of our Wolds; several were seen at Spurn about the same date.

Ortolan (*Emberiza hortulana*). October 11th, Mr. Hewetson, of Leeds, shot a young female Ortolan in a field near Easington, at this date.

Raven (*Corvus corax*). At the Leman and Ower Light-vessel, on October 12th, noon, W. (4) B.C.M., twelve Ravens and twenty Titlarks are recorded from eastward, going north-west. As Crows, Black Crows, Grey Crows, Rooks, and Jackdaws are entered at various dates in the same schedule, this occurrence may probably be taken as correct.

Snow Bunting (*Plectrophanes nivalis*). October 15th, flight of many hundreds in the marshes, appeared to consist almost exclusively of young birds; smaller flights, with much white in their plumage, came in with the gale from N.E., on October 19th and 20th.

Golden-crested Wren (*Regulus cristatus*). In the first fortnight in October, many; and in the third week, from the 17th to 22nd, hundreds and thousands between Flamborough and North Cotes, on the Lincolnshire coast, and in all probability, extending to much further north and south, had observers been available. Mr. Haigh saw numbers at Tetney on the 22nd with Great and Blue Tits, and Redbreasts.

Dipper (*Cinclus aquaticus* var. *melanogaster*). Mr. Kew, of Louth, has a very good example of the northern form, shot somewhere in the marsh district, east of Louth, a few years ago, in the autumn.

Woodcock (*Scolopax rusticola*). From the 10th to the 22nd of October the wind was persistently E. and N.E.—very rough at sea. On the night of Saturday 19th, and Sunday 20th, there was a heavy gale from N.E. During this time, from the 10th to 22nd, Woodcocks kept dropping in daily, at various points of the coast, but not in great numbers. The 'great flight' came across on the night of Saturday, November 9th-10th, wind N., but very slight—full moon. Woodcocks also occurred at Heligoland on Sunday morning, the 10th, wind northerly, light, accompanied by Blackbirds, and preceded by *Parus major*, *Fringilla linaria*, and *Lanius major*. The gale of October 19th and 20th was very destructive to the coast-line south of Kilnsea, considerably altering the character of the shore. Many immigrants on nearing land were beaten into the sea, and I found the coast south of Easington strewn with the bodies of Rooks and some Jackdaws. From Flamborough, Mr. M. Bailey, in litt., October 23rd, says:—'The storm of Saturday night caught the migrants at sea, and great numbers perished, others, striking the cliffs, fell to the bottom dead, and were seen by scores, washing about in the surf. At present, the storm is raging, with the barometer at 29°-50′, and a strong easterly wind blowing, which has brought over Woodcock, Ring-ousels, Golden-crests, and Redstarts. The Grey Shrike and a Shorelark have been obtained.' Mr. Haigh writes:—'The North Cotes and Marsh Chapel coast is strewed with the remains of Rooks, Redwings, and a very few Starlings.'

Mealy Redpole (*Linota linaria*). Between the 20th and 24th October, several were seen at Spurn and Easington, and some shot. I have not met with it in this district since October 1881, when the Rev. H. H. Slater, Mr. W. Eagle Clarke, and myself found so many at Spurn. It is an irregular winter visitant in this district, seven or eight years intervening between its visits. As on the last occasion in 1881, it was associated with Siskins.

Brambling (*Fringilla montifringilla*). In considerable numbers at Spurn at the same date.

Shorelarks (*Otocorys alpestris*). October 20th to 24th. Several seen, and some shot; subsequently very numerous on coast.

Great Grey Shrike (*Lanius excubitor*). From October 20th to the end of the month several were seen in the Spurn district. Two were observed by Mr. G. H. Caton Haigh on a clump of

trees near the coast at North Cotes on the 22nd. I had the wing of one from the Leman and Ower Light-vessel, which struck the lantern and was killed on the 22nd at 12.30 a.m.

Little Stint (*Tringa minuta*). Fairly numerous in the Humber district in September. One was taken in the flight-nets at Tetney as late as October 21st.

Water Rail (*Rallus aquaticus*). There is always a considerable arrival on this coast between the middle of October and the end of the first week of November. Their immigration appears as well marked nearly as that of the Woodcock. Two were obtained close to the coast at Kilnsea on October 20th and 23rd, and several from this date in Lincolnshire.

Sea Eagle (*Haliaetus albicilla*). A young female, measuring 8 ft. in extent of wing, was shot by Mr. J. C. Clubley, with a charge of No. 8, in the head, on October 28th, skimming low down over the bents near the chalk embankment at Spurn; another was seen at the same time. Presumably, the second bird was again seen near the point at Spurn on November 7th by Mr. Townsend, of the coast-guard, and others. Mr. Townsend told me he was very near the bird.

Purple Sandpiper (*Tringa striata*). An extremely fine example, from its size probably an adult female, was shot from a flock of Dunlin on the coast near Killingholme Haven on November 2nd. The upper parts have that rich purplish gloss which is acquired with the autumn moult.

Rough-legged Buzzard (*Archibuteo lagopus*). November 1st, an immature male, a very small example, shot near Kilnsea.

Golden Plover (*Charadrius pluvialis*). The immigration commenced on the Lincolnshire coast at Tetney on October 30th, when Stubbs saw large numbers coming in during the day. Here, at Great Cotes, we had considerable arrivals on Nov. 1st and 2nd, only remaining a few days, and then leaving again. On Monday, 11th, young Stubbs saw thousands going N. all the morning. They were very high up, and would not be whistled down. The northward movement of Golden Plover at this season indicates mild open weather for some time to come.

Tree Creeper (*Certhia familiaris*). November 1st, two, male and female, shot at Easington Lane end, where it meets the coast-line. There can be little doubt these were immigrants recently arrived.

Fire-crested Wren (*Regulus ignicapillus*). I have a very beautiful adult male, killed on November 4th, by a boy with a stone near Easington. The white streak over the eye and the black streak through the eye will at once distinguish it from its congener. The beak also is rather stouter than in the Gold-crest, and there is a conspicuous golden-green patch on the side of the neck. At Heligoland they are in autumn always later than the Goldcrests, and in spring earlier.

Black Redstart (*Ruticilla titys*). November 6th, an adult male was seen in a garden at Easington.

Swallow (*Hirundo rustica*) and **Martin** (*Chelidon urbica*). On November 10th, I saw a Swallow flying under Kilnsea Cliff, and the same day a Martin hawking near the village of Kilnsea.

SEA-FOWL.

I have recently seen and examined the following birds obtained at sea, and brought in by fishing-smacks to Grimsby:—

Pomatorhine Skua (*Stercorarius pomatorhinus*). A young bird, of the light variety, in first plumage. In this the *four* central tail feathers, two of which are very broad, are equal in length, and project half an inch beyond the next or third feather on each side.

Great Shearwater (*Puffinus major*). One caught by a hook.

Iceland Gull (*Larus leucopterus*). A young bird. In this the legs and feet are pale flesh colour, bill brownish-black at tip, the anterior part *pink*, and quite as deep in colour as in the bill of *Anser brachyrhynchus*.

In forwarding these notes to *The Naturalist*, I beg to acknowledge my indebtedness to Mr. G. H. Caton Haigh, of Grainsby Hall, for information sent in letters, on the birds seen by him during the autumn on the coast of Lincolnshire; also to Mr. Philip Loten, of Easington, for personal information on the Spurn district.

NOTE—ORNITHOLOGY.

An Albino Wheatear in Cumberland.—In the early spring of the present year (April 15th, 1889), the writer was taking a stroll along the beach known as the North Shore, at Workington, near the mouth of the river Derwent, when his attention was arrested by the movement of a flock of Wheatears (*Saxicola œnanthe*). The birds, about a dozen in number, were all males, resplendent in full breeding plumage, and apparently but newly arrived. One of the number was a strikingly handsome bird, his snowy poll readily distinguishing him from his fellows. Except a slight smirching of colour upon the outer wing covers, his plumage was stainless as the 'untrodden snow' on the plains of Linden. He probably found a mate, but not in the immediate neighbourhood, though several pairs nest in the slag banks of the iron furnaces hard by, or among the stacks of pig iron, as I saw him no more.—W. Hodgson, A.L.S., Workington, August 16th, 1889.

GEOLOGICAL PAPERS RELATING TO THE NORTH OF ENGLAND

Read at the Newcastle Meeting of the British Association, 1889.

S. A. ADAMSON, F.G.S.,
Leeds.

Amongst the many valuable papers read and reports presented at the recent annual meeting of the Parliament of Science, may be briefly mentioned the following: that eminent glacialist, the President of the Section, Prof. J. Geikie, F.R.S., in his inaugural address, described the glacial accumulations of Northern Europe, with references to those of our own country; J. E. Marr, M.A., F.G.S., 'Dynamic Metamorphism of Skiddaw Slates' (he described a belt of Skiddaw Slates running along the W. side of the Cross Fell escarpment, from Melmerby to Roman Fell, and had noted several large masses of quartz; in a good exposure on the E. side of Brownber, the quartz veins had been evidently intruded along bedding planes before the main folding took place; they had since been extremely contorted, and the slates had been altered into a rock composed chiefly of mica and secondary quartz); J. J. H. Teall, M.A., F.G.S., 'The Amygdaloids of the Tynemouth Dyke' (this dyke is exposed in the angle formed by the breakwater and the cliff on which the Priory stands, and also in the cutting near the railway-station; a typical specimen was said to consist essentially of porphyritic crystals, or crystalline aggregate of a felspar closely allied to anorthite, embedded in a dark finely-crystalline ground-mass, composed of augite, lath-shaped felspars and interstitial matter; the history of the rock so far as it is recorded in microscopic structure closed the paper); T. P. Barkas, F.G.S., 'Notes on numerous newly-discovered Fossil Footprints on the Lower Carboniferous Sandstone of Northumberland, near Otterburn' (the pith of this interesting paper appeared in the September *Naturalist*, p. 270); T. Mellard Reade, F.G.S., 'The Physiography of the Lower Trias' (after reviewing various theories accounting for the marine current-bedded sandstones constituting the base of the Trias, known as the Bunter, he suggested that a granitic area, such as would be exposed now by an elevation of, say, 1,000 ft., occupying the site of the English Channel, together with the Old Red Sandstone beds of the anticlinal axes connecting the Mendips with the Belgian coal-field, along with the immense denudation of the Carboniferous Sandstones of the Pennines, etc., added to the destruction of the Old Red of Herefordshire, may have supplied the materials for these sandstones); Prof. W. C. Williamson, F.R.S., 'Report on Coal Plants: On the state of the

Inquiry into the Microscopic Features of the Coal of the World, and into the Organisation of the Fossil Plants of the Coal Measures' (the venerable but energetic Professor said that some years ago he determined on a microscopic examination of the chief coals of the world, the object being to obtain more information as to their origin and formation, amongst the specimens which had been forwarded from all parts of the world, ranging from the Arctic Regions to Australia, from Japan to Nova Scotia, and from Sweden to Borneo, were some from Durham and Whitehaven, but none from Yorkshire were mentioned); G. R. Vine, 'Polyzoa of the Red Chalk' (this being of a most technical character, was taken as read); John Marley and Prof. Lebour, M.A., F.G.S., 'Sketch of the rise and progress of the Cleveland and South Durham Salt Industry, and on the extension of the Durham Coal Field' (this was a most important communication; after a review of the whole subject, the area of proved salt was said to be at least twenty miles; details of borings were given and specimens exhibited of the same); C. E. De Rance, F.G.S., 'Fifteenth Report of the Committee on the Circulation of Underground Waters' (the Committee had inquired into the waters yielded by the Permian and Trias, following these formations from Teignmouth in Devon to Tynemouth in Northumberland); Dr. D. Embleton, 'On the spinal column of *Loxomma allmanni* from the Northumberland Coal-field' (this specimen had a longer series of vertebræ than any hitherto got from the Coal Measures, and was probably, when living, 14 ft. long); Dr. R. Laing, 'The Bone Caves of Cresswell' (described the recent discovery of an extinct feline —*Felis brevirostris*—new to Great Britain); G. W. Lamplugh, 'Report on an Ancient Sea Beach near Bridlington' (the report stated that no further excavation of the buried cliff-beds had been done during the past year, but the committee asked to be re-appointed, without grant, for the determination and disposal of the specimens); Dr. H. W. Crosskey, F.G.S., 'Report upon Erratic Blocks' (the work of the Yorkshire Naturalists' Union in this direction, embracing nearly sixty reports during the past year, was highly eulogised, and stated to be excellent and exhaustive, and an example to other counties; a contour map of Yorkshire, to mark the elevations of the various boulders reported, was recommended); G. W. Lamplugh, 'Note on a new locality for the Arctic Shell-beds of the Basement Boulder-clay on the Yorkshire Coast' (the paper stated that the basement boulder-clay at the South Landing at Flamborough Head included many irregular masses of fine gravel, silt, and sand; one of these, a thin lenticular layer of greenish-yellow sand, contained many shells of the same species discovered at Bridlington and

Dimlington, and their matrix also was similar); W. Topley, F.R.S., 'The Work of the Geological Survey in Northumberland and Durham' (this was an excellent synopsis of the geology of these two counties, with special references to the igneous rocks of the Cheviots, and the intrusive basaltic rocks known as sills and dykes); R. Tiddeman, F.G.S., 'On concurrent Faulting and Deposit, Craven, Yorkshire, with a note on Carboniferous Reefs' (he described the Craven faults, and speaking of the breccias found at the base of the limestone, suggested they were reefs formed on a slowly-subsiding sea-bottom).

The above are a few brief notes upon a small portion only of the papers read in merely one section. If we contemplate the amount of research and labour contained in the whole of the sectional papers, we must be impressed with the wonderful amount and valuable nature of the work the members of the British Association yearly accomplish.

NOTES—ORNITHOLOGY.

Redbreasted Flycatcher at Scarborough.—An immature Redbreasted Flycatcher (*Muscicapa parva*) was obtained by Mr. John Morley, at Scarborough, on October 23rd; it was in a wood amongst beech trees, and was observed to fly from its perch at intervals after flies, the white feathers in its tail being then very conspicuous. Mr. Morley adds that the wood was swarming with Golden-crested Wrens, and also Woodcocks, which had evidently just arrived. The bird has been to London for comparison, and its identity fully established, as I took it to the Zoological Society for that purpose; it was too much shot to distinguish the sex.—J. H. Gurney, Jun., Keswick Hall, Norwich, November 28th, 1889.

This Yorkshire example is the seventh specimen and sixth occurrence known for Britain.—W.E.C.

"*Muscicapa parva* turns up here (Heligoland) almost every autumn late in October, and, wonderful as it should seem, during the first half of November. It is a quiet bird that with you, amongst all your trees and shrubs, easily might escape notice.—Heinrich Gätke, per John Cordeaux, 13th December, 1889.

Great Spotted Woodpecker near Alford.—An adult female of the Great Spotted Woodpecker (*Dendrocopus major* L.) was brought to me on the 26th November, having been shot the previous day at Ailby by Mr. S. Lonsdale.—Jas. Eardley Mason, The Sycamores, Alford, Linc., 29th November, 1889.

Great Spotted Woodpecker at Liversedge, Yorkshire.—A Great Spotted Woodpecker (*Dendrocopus major* L.) was shot on the 8th of November at Liversedge by Mr. Joseph Woodcock. The Rev. William Fowler, who showed it to me in the flesh, said that he believed it to be the first that had occurred in that neighbourhood. It was a fine specimen, and the crimson occipital crest showed that it was a male.—E. P. Knubley, Staveley Rectory, Leeds, Nov. 16th.

Flamborough Bird-Notes.—Innumerable quantities of birds have arrived on our coast for the last few days. Thursday, Oct. 17th, I saw scores of flocks of Larks (*Alauda arvensis*) making for the Headland; also several flocks of Crows and Jackdaws (*Corvus monedula*). Unfortunately for some of them, the storm of Saturday night and Sunday overtook them, and before reaching the land they perished in the sea; others, striking the cliffs, fell to the bottom dead, and were seen by scores washing about in the surf. At present the storm is raging, with the barometer at 29·50, and a strong easterly wind blowing, which has brought over several Woodcocks (*Scolopax rusticola*), Ring-ouzels (*Turdus torquatus*), Gold-crested Wrens (*Regulus cristatus*), Redstarts (*Ruticilla phœnicurus*), etc., the Great Grey Shrike (*Lanius excubitor*) and one Shorelark (*Otocorys alpestris*). —Matthew Bailey, Flamborough, October 23rd, 1889.

Naturalist,

OCCURRENCE OF THE GERMON ON THE CUMBERLAND COAST.

Rev. H. A. MACPHERSON, M.A., M.B.O.U.,
Carlisle.

I HAVE the pleasure of recording the recent occurrence of an example of the Germon (*Thynnus alalonga* Günther) on the coast of Cumberland. The specimen in question was found stranded in a creek on Burgh Marsh early in October 1889, by a fisherman. It was secured for me in the flesh, and weighed 11 lbs. The long sickle-shaped fin convinced me at once that the fish could only be referred to *Thynnus alalonga*; but, to anticipate gainsayers, I took the fish to the Natural History Museum, where Mr. Boulenger kindly confirmed our determination. Although this species has occupied a place in the British list for a long number of years, this *appears to be* only about its fifth occurrence in British waters, and to be considerably more northern than the others, all of which refer to the coasts of Cornwall and Devon.

NOTES—ORNITHOLOGY.

Waxwing and Dotterel in Central Ryedale.—Will my friend, Mr. C. W. Smith, allow me to add to his interesting list two more notes on Birds of Central Ryedale?

WAXWING (*Ampelis garrulus* L.). During some severe winters a pair or more of these beautiful-plumaged birds were to be seen perched on the uppermost branches of lofty fir-trees in 'Acus' plantation on the banks of the Riccal not far from Helmsley. Others were noticed to frequent the fir-woods near to Cow-house Bank, four miles north of Helmsley.

DOTTEREL (*Eudromias morinellus* L.). Forty years ago numerous flocks of these birds were to be met with on the Hambleton range of hills near Thirsk. In walking across the plain from Dialstone Inn to South Woods I have put up many hundreds. Their numbers are greatly diminished. A few may be met with north of Limekiln House on the old Roman road leading to Osmotherley. Anglers know the value of a feather from the wing of a Dotterel wherewith to dress a 'March Brown' or an 'August Dun.'—JNO. H. PHILLIPS, Scarborough, 8th November, 1889.

Late Breeding of Starling in Northumberland.—In connection with the recent controversy as to whether the Starling (*Sturnus vulgaris*) is double-brooded or not, the enclosed paragraph from this day's 'Newcastle Daily Journal' is interesting:—'At present there is to be seen at Heiferlaw Bank, near Alnwick, a brood of young Starlings; the old birds are feeding them.'—H. T. ARCHER, Newcastle-on-Tyne, November 30th, 1889.

NOTE—BOTANY.

Draba verna in November.—On the 25th of this present month, my son saw abundance of this plant in flower and with completely-formed silicules, on a wall-top near Chathill, North Northumberland. I have half-a-dozen specimens growing in a saucer.—P. J. MACLAGAN, Berwick, November 28th, 1889.

SOME RARE MOSSES IN CUMBERLAND.

Rev. C. H. BINSTEAD, B.A.,
Aspatria, near Carlisle.

Grimmia elongata Kaulf. This was found, in September, at an altitude of about 2,500 ft., growing upon wet rocks in compact cushions of a dull olive-green colour. It seems to be confined to one mountain—Whiteside—where it grows in plenty, although, apparently, within a restricted area.

Coscinodon cribrosus (Hedw.) Spruce. Grows on a wall (slate) in the Lorton Valley, near Cockermouth. It is plentiful in one place, and occurs in small quantity also at widely-distant intervals, upon walls, where it is found in company with *Grimmia Doniana* Smith, from which it may generally be distinguished by its pale colour.

Mnium orthorrhynchum Br. & Schpr. What appears to be this moss—so rare in our country—was found, in September, at the Lodore Cascade, in one place only. It does not seem, however, to be quite clear whether the moss in question is the true *Mnium orthorrhynchum*, or *Mnium riparium* Mitt. From a careful comparison of the leaf-cells, together with the general aspect of the moss, there appears to be hardly any appreciable difference between the Lodore *Mnium* and *Mn. orthorrhynchum* from the continent. Whichever of the two it may be shown to be, it is hoped that a brief notice of its occurrence in Cumberland may be of interest to students of our northern mosses.

November 15th, 1889.

OCCURRENCE OF CAREX STRIGOSA IN NORTH YORKSHIRE.

J. GILBERT BAKER, F.R.S., F.L.S.,
Royal Herbarium, Kew; Ex-President of the Yorkshire Naturalists' Union.

I am indebted to Mr. W. W. Reeves, for many years librarian to the Royal Microscopical Society, for specimens of *Carex strigosa*, gathered by himself in Forge Valley this summer, whilst botanising with Mr. M. B. Slater. This adds a species to the flora of the North Riding. The plant has long been known to occur at Hackfall and Studley, just outside our limits. These are the most northern stations known for the plant in Britain. They also found *Equisetum Telmateia* var. *serotinum* A. Br., the form of *E. Telmateia* in which the fertile stem bears leafy branches.

THREE WEEKS ON THE GUADALQUIVIR.

H. E. DRESSER, F.L.S., F.Z.S., Etc.
Author of 'The Birds of Europe'; President of the Yorkshire Naturalists' Union
(being the second portion of the Presidential Address to the Union).

I had been suffering from gastritis all last winter, and was thinking of taking a holiday, to try and get quite well again, when my friend, Colonel Hanbury Barclay, asked me to join him in a trip he had decided to take in the south of Spain, chiefly with a view to collect eggs, and although I expected to have to rough it a little, I at once decided to close with so good an offer. Colonel Barclay had already arranged to have the use of a steam launch on which we could live, so that we should be quite independent of inns, which, except in the larger towns, are in Spain, places to be most carefully avoided.

We started from London on the 1st May, and after spending one day in Paris, and one in Madrid, reached Seville early in the morning of the 4th; and after a most refreshing bath and lunch at the house of a friend, we went to the river to see our steam launch, and take in stores. Our luggage, which we had sent over from London by steamer, was still at the Custom House, and it took us a couple of hours to get it passed and put on board the launch, and it was late in the evening before we had all our stores aboard and could make a start. Our crew consisted of a skipper, who could also do a little cooking, an engineer, a boy, and a man—who was to act as guide when we went ashore, and to make himself generally useful when we were in search of eggs. Our steam launch had a good-sized saloon, aft, with seats along the side, which, at night, were made up into beds for the Colonel and myself, the rest of the furniture being only a table and some campstools. Aft of the saloon was a small space where we had our bath, and which we used as a dressing-room, and in the saloon we had a couple of lockers or cupboards for our stores. Forward, there was a cabin below deck, for the men, and on the deck was a cooking-stove, but as the whole vessel was covered with a sheet-iron roof or awning, the men usually slept on the benches on deck, well protected by the awning, and we utilised the top of the saloon, which was well protected from the sun and rain, as a store place for our luggage and stores. Our hunting-ground was on both sides of the Guadalquivir river, from Seville to the sea, but for obvious reasons I refrain from giving any particulars as to exact localities, although, owing to the difficulty and consequent expense in getting there, it would not repay anyone to visit these parts merely to collect eggs and birds with a view to dispose of them.

At about six o'clock we went aboard and dropped down the river. We prepared our own supper, as the skipper was busy, and after getting our stores somewhat in order, we made up our beds, and turned in, but did not either of us sleep particularly well, as the seats on which we lay were so narrow, that we could not turn round without danger of falling off, besides which, the cushions were abominably lumpy. These small inconveniences, however, we got quite accustomed to in a day or two, and managed to sleep pretty well. At five o'clock the men were moving, so we turned out and got our breakfast, consisting of chocolate, bread, cold fowl, and oranges; and soon got up steam and moved onwards towards the large marshes, but on the way we made a halt, and went on shore to explore amongst the belt of trees and bushes which skirted the river. Here we found a Magpie's nest containing six eggs of the Magpie (*Pica caudata*), and one of the Great Spotted Cuckoo (*Coccystes glandarius*) which we took, and we saw numbers of small birds, but found no more nests, and as the long grass was very wet, it having rained in the night, we found walking so uncomfortable, that we were glad to return to the launch. As we steamed slowly along the river, we saw numbers of Bee-eaters (*Merops apiaster*), a few Black Terns (*Hydrochelidon nigra*), and several Marbled Duck (*Anas angustirostris*) flew up out of the reeds as we passed. We soon reached the marshes, and disembarked for a ramble on shore. The whole country around was one vast pasturage, for the water had dried up, except in places, leaving mud on which had grown up grass and flowers, and large herds of cattle and horses were grazing on the rich herbage. In most places the ground was very irregular, owing to the cattle having roamed around when the ground was still soft, leaving holes rather than hoof-prints. Here and there were low bushes, and tansy seemed to grow everywhere. We found several nests of the Short-toed Lark (*Calandrella brachydactyla*) with eggs, and two or three of *Calandrella bætica*, all these latter, however, being empty. The nests of the Short-toed Lark were placed on the ground, usually in a hoof-hole left by the cattle as they trampled through the soft mud, and almost always at the foot of, or near a tuft of grass or low bush, and were as a rule not very strongly constructed of dry grass bents. The nest of *Calandrella bætica* was usually better and stronger built than that of *Calandrella brachydactyla*, and the nests of the two species could be readily distinguished. Both species usually line their nests with a few feathers, or use a little wool in the lining, but not invariably; and the nests of *Calandrella bætica* generally contain fewer feathers than those of *Calandrella brachydactyla*.

We had arranged, before leaving Seville, for three horses to be sent here to meet us, and soon after noon we saw them in the far distance coming toward us. After letting the horses have a rest, and after taking a slight lunch ourselves, we started on horseback with our guide, and visited several marshy places, having frequently to wade long distances through the water. We saw a good many Stilts (*Himantopus candidus*) and Pratincoles (*Glareola pratincola*), but found eggs of neither. We observed numbers of Short-toed Larks, Calandra Larks, Grey-headed Wagtails (*Motacilla flava*), and a few Stone Curlew (*Œdicnemus scolopax*), one of which the Colonel shot, but we could not find their nests. Towards evening we returned to the steamer, got our supper, blew our eggs, and turned in. The next morning (6th May) we did not turn out till nearly seven, and did not go ashore till eight o'clock, when we found the horses waiting for us. We had two men with the horses, so we arranged for the old man to go with us, and the younger man and our guide to go in another direction, to see if they could find any eggs, whilst we went to the breeding-haunts of the Stilt. Our horses were not provided with regular saddles, but merely with pack-saddles and huge grass-panniers, such as are used in the country, and we either straddled or sat sideways on the top. Our great drawback was that as these saddles were not provided with stirrups, we could not mount without getting a 'leg up'; but the old man had his own trained horse, which, when he wanted to mount, put its head down, and when he bent over the neck the horse threw its neck back, and thus rolled him on to the saddle. I tried this dodge, but my horse was evidently not up to it, and I had to give it up as a bad job. Before we left England we had two baskets made, which were so arranged that they could be used as knapsacks, or else fastened like panniers on a horse, and these proved most useful, for we put them in the grass-panniers and filled them with cotton wool, amongst which we packed the eggs as we took them. Besides these, we carried food for the day, and a large earthenware bottle of fresh water to drink. After riding across the grass prairie for about a couple of hours, and crossing several shallow lakes or overflows, we came to a large sheet of shallow water, through which we waded for about half a mile, until we reached a huge patch of reeds, in which our man told us we should find the Stilt breeding. We were soon met by about a dozen Whiskered Terns (*Hydrochelidon hybrida*), who flew over our heads, clamouring loudly, evidently strongly resenting our intrusion on their domain. We soon found several nests of these Terns, but all were empty. Some distance further on we were met by a number of Stilts (*Himantopus candidus*), who flew round us,

clamouring loudly, approaching quite near, and every now and again settling on the rank masses of white water-buttercup which covered the surface of the water in patches where it was free of rushes. Here we soon found several nests of Stilts containing eggs, and, dismounting, we proceeded to take the eggs, mark them with pencil, and pack them in our baskets. The water was in places nearly up to our knees, though in most parts it was scarcely above our ankles, but the bottom was soft mud, which made walking rather difficult. Both of us had, however, water-boots, and I was fortunate in possessing a very strong pair of German marsh-boots, which reached up to my knees, so I did not get the water into my boots; and, in fact, after wading in water for several hours my stockings were scarcely damp. As we went on we found many nests of the Stilt, and also of the Terns, and took as many eggs as we cared to take away with us. The two species nested near each other, and sometimes close together, but usually in separate communities. The nests were placed in the dense growth of water-buttercup that covered the surface of the water, usually in more open places where the rushes and reeds grew more sparsely, and in nearly knee-deep water. The nests of both species were strongly and well constructed of rush and reed bents, but the nests of the Stilts were stouter and stronger built, being raised much higher above the water, whereas those of the Terns were flatter and more lightly constructed, and were invariably lined with bleached rush and reed bents, and were thus easily distinguished, even at some distance. The full complement of eggs was four of the Stilts and three of the Whiskered Terns. We also found several nests of the Coot (*Fulica atra*), but only one with the full complement of eggs. After spending some time in the reeds, and visiting several colonies of Terns and Stilts, we returned to a sandy island for lunch. Here we saw a good number of Pratincoles and several Kentish Plovers (*Ægialitis cantiana*), and found four eggs of the latter on a piece of dry cow-dung, without any pretence of a nest. On the shore were several flocks of Waders, and Colonel Barclay fired into one flock and picked up one Dunlin (*Tringa alpina*), one Ringed Plover (*Ægialitis hiaticula*), and one Pigmy Curlew (*Tringa subarquata*). At four we returned to the grass prairie, and rode back to the river. We passed large flocks of cattle and horses, and the ground was covered with grass, tansy, and a rich purple flower, and here and there we observed a very pretty deep blue Spanish Iris. We returned to the steam launch for supper, and soon after our two men came in with a clutch of Bustards' (*Otis tarda*) eggs and the hen-bird, one clutch of Bitterns' (*Botaurus stellaris*), a lot of Coots eggs, and one young Coot in down, which last I skinned at once,

and we spent the rest of the evening blowing eggs and skinning birds.

The next morning (7th May) we were up at six, and, after getting up steam, started for a place where we expected to find the Little Bustard (*Otis tetrax*), arriving there soon after ten, and at once went ashore. To-day we were on foot, having sent the horses off to some distance, intending to rejoin them to-morrow. We passed through large tracts of grass-land, and in one place we had to pass through a large enclosure, in which were numbers of fighting bulls, so-called 'Toros bravos,' destined for the bull-ring, which are often very awkward customers to meet. We gave them a very wide berth, and kept as close to the fence as possible. We passed also in another pasture large herds of horses and cattle. In some parts the ground was covered with a plant bearing a flower rather like that of a white nettle, pretty, but, they told me, of little use as food for the cattle. Everywhere the wild flowers were very beautiful and abundant, and there were many sorts that I did not know at all. We also passed large fields of wheat, oats, and barley, and saw numbers of Great Bustard, but could not get within gunshot. We took one nest containing two eggs of the Great Bustard, and one nest of Calandra Lark, but saw no sign of the Lesser Bustard. After walking about three hours, we returned to the launch, and visited an island where the Night Heron (*Nycticorax griseus*) usually breeds. The island was surrounded by a dense fringe of reed 10 to 20 ft. high, and studded over with large white poplar trees. Brambles were everywhere in dense profusion, and we got well scratched and torn as we pushed our way through. We saw several last year's nests of the Night Heron, but not one tenanted, and a Black Kite's (*Milvus migrans*) nest which we also examined was empty. Not finding anything in the way of eggs, we steamed off some distance along the river, and went ashore to prospect. The country was flat and covered with dense grass and a sort of small purple flowering clover, and abundance of wild flowers of various sorts; and there were large herds of horned cattle and horses. At one place the bulls followed us, and showed signs of attacking us, but a dog we had with us effected a diversion, and we beat a hasty retreat. We saw numbers of Pratincoles, Calandra and Short-toed Larks, and several Stone Curlew, but found no Pratincoles' eggs, though we got one nest of the Calandra Lark. On our way back to the launch we found our two men with the horses camped, and preparing their supper. They had shot a hen Bustard and taken her eggs, which they gave us, and which we found very hard set, and had difficulty in blowing them, which we did before turning in for the night. Hitherto the weather had been

extremely fine, the sun so hot that our faces began to peel, but there was always a wind blowing over the marismas which made it cool, except in the direct rays of the sun. This evening, however, it clouded over, and looked like rain, but early in the morning (8th May) the clouds began to disperse, and it soon became very hot. At six o'clock we steamed along two or three miles to a place where the horses were awaiting us, and we then mounted, and started across a flat country, most of which had recently been submerged, but was now covered with a tolerably dense growth of herbage, and studded somewhat closely with low bushes. Here we found a nest of the Mallard (*Anas boschas*) with fresh eggs, and saw several Marbled Duck (*Anas angustirostris*), but could find no nest. The Black-bellied Sand-Grouse (*Pterocles arenarius*) was seen several times; and in the far distance, wading in a shallow lake, were hundreds of Flamingoes, looking like a white stripe on the horizon. Last season they nested here, but the present season being a dry one, not a nest was to be found. Many of the shallow lakes were dried up, and large tracts which last year were covered with water, were now overgrown with grass, or were a nearly bare tract of sun-dried mud. Here we also met with several Harriers (*Circus æruginosus* and *Circus cineraceus*), both of which are arrant egg-thieves, and destroy numbers of nests. We camped for lunch on a small island on which *Convolvulus minor* grew in great abundance; and here, as in most parts of the dry parts of the marshes, the Painted Lady Butterfly (*Vanessa cardui*) was extremely numerous. Kentish Plover and Pratincole flew past us as we were eating our lunch, and many flocks of shore birds were wading about in the shallow water. After lunch we went some distance along the lagoon, and then waded across to a dry patch on which the old man, who acted as our guide, told us we should find the Slender-billed Gull (*Larus gelastes*) breeding, and we certainly found several nests, but they contained only egg-shells, all the eggs having been broken, which was a great disappointment to us. We saw no Gulls, but many Gull-billed Terns (*Sterna anglica*), one of which we shot. We saw many Grey-headed Wagtails (*Motacilla flava*) and Short-toed Larks, and took one nest of *Calandrella bætica* containing a single egg. On the way back we saw a single Flamingo, wading in the shallow water, and the old man told Colonel Barclay that he could take him close enough to it to shoot it, by using his horse as a stalking-horse, so they started off, I taking charge of the other horses. Stripping his horse, and leaving only a halter on it, the old man kept behind the fore-quarters of the horse, the Colonel doing the same behind its hind-quarters. The horse, who evidently

knew his business, proceeded slowly as if grazing, gradually working towards the bird, the two men keeping well concealed behind it. We had a black lurcher-cur with us, who was told to remain behind, and who sat by me watching their proceedings with the greatest interest. After some time they got within range, without disturbing the bird, and the Colonel fired, killing the Flamingo. The moment the shot was fired, the dog went off like a flash, dropping a piece of meat I had just given him, and retrieved the dead bird. This dog, by the way, though an ugly, lean cur, reminded me of the dogs I used to see hanging about the wigwams of the Red Indians in America, was a most useful beast, for he would crouch down or sneak behind, when we were after shore birds, and was an excellent retriever. Besides, he could find nests, and did so very often, but once or twice I caught him helping himself to an egg on the quiet, and he spoilt several clutches for us, but this was his only fault. The old man was our greatest trial, for he was very deaf, which he did not like to own, and his answers when spoken to were generally far from the mark, besides which, he chattered incessantly. He was moreover, too old to find nests, and would have found none but for his dog. Towards evening, we rode leisurely back to the launch, and on the way saw several Sand-Grouse, which, the old man told us, bred hereabouts rather later in the season. When we arrived on the river bank, we found the two younger men (who had been off in another direction) awaiting us. They had one egg of the Marsh Harrier, with an old bird, and five young in down, one old Purple Heron (*Ardea purpurea*), and four young in down, and one Marbled Duck; but no eggs, except one Harrier egg, above referred to. These men, if allowed, would pot every bird they met with, irrespective of season, and we had often considerable difficulty in preventing them from shooting birds which were no use for food, and which we did not want to skin. To-day, the sun had been very hot, but late in the evening the clouds gathered, and during the night we had torrents of rain. Towards morning it cleared, and when we got up (9th May), it was quite fine again. The Colonel wanted to shoot an old male Bustard, so we steamed off to a place where they are always to be found, and going on shore with all hands, we walked through the grassy prairie till we found Bustard, and tried a drive, without, however, any success, for, although we saw more than one flock of male birds, they were far too wary to be approached, and could not be driven within gun-shot of the Colonel, who was posted in a ditch, well hidden amongst the dense herbage. After trying for some hours, we decided to revisit the place where, a few days back, we found the Stilt breeding, so we went back to the steamer and started, arriving

at the place where our horses were awaiting us, early in the afternoon, and mounting, we rode off, passing several large sheets of water on our way to the Stilts' home. Arrived there, we were met first by the Whiskered Terns, who, clamouring loudly, flew round us before we arrived amongst the rushes. A little further on, numbers of Stilts flew close around us, uttering their wailing call, *keeck*, *keeck*; every now and then settling down close to us, and after running for a few paces on the plants covering the surface of the water, would fly up again and circle round us. They were extremely tame, and let us approach within a few paces, until a shot was fired, as the Colonel wanted a pair for his collection, and they then kept well out of gun-shot range. We picked out a few clutches of the best marked eggs of both the Stilt and Whiskered Tern, and then returned back to the grass covered prairie. On our way back to the river we saw several flocks of shore birds, Grey Plover (*Squatarola helvetica*), Pigmy Curlew, Dunlin, Ring Plover, etc., and by using the old man's horse as a stalking-horse, my companion shot specimens of all those birds, and also two Sand-Grouse (*Pterocles arenarius*). These birds do not frequent the dry sandy localities of which there are large tracts not far distant, but are always found in the grass-covered spots in the marismas, where, not long before, there could have been nothing but vast sheets of water and patches of mud; and their eggs are, we were assured, invariably found in these marismas or marshes. They make no nest, but deposit their eggs in a suitable depression in the ground without any lining. Late in the evening we returned to the launch, and found that our men had already come back, bringing with them four eggs of the Pratincole, three Baillon's Crake (*Porzana bailloni*), three Kentish Plover, and three nests with eggs of the Short-toed Lark.

The next morning (10th May), as our supplies were low, we determined to go up to Seville, so started quite early, the weather being fine and the sun very hot. Just before midday we arrived at Coria, and went ashore for a short time. Here we found many warblers in the groves and orange gardens near the town, but did not remain to collect any specimens or to look for eggs. This town, though numbering about 4,000 inhabitants, is, to all appearance, a century behind any English or French town; the streets are only partially paved with rough stones, and the centre of the street is a gutter, which appears to act as a common sewer. Altogether, it reminded me forcibly of a Mexican town, as I used to see them when in that country twenty-five years ago. Between Coria and Seville the banks of the river are well covered with willows, white poplars, and tamarisks, and every here and there were gardens and

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cultivated tracts, some of them extremely beautiful, and we passed several large orange and lemon gardens. Nightingales were so numerous that it seemed as if there was at least one every dozen yards along the bank, and we saw many other small birds in the bushes and reeds on the banks as we steamed along. Arrived at Seville in the afternoon, we took in a fresh supply of stores, and as we purposed going into the woods on the morrow, we hired a lad as a climber, and succeeded in getting the son of an English workman, who could speak Spanish and English, and was therefore available as an interpreter for the Colonel, who could not speak Spanish. After getting our supper with a friend, we went on board and turned in, starting off soon after. At five o'clock (11th May) we passed Coria again, and soon arrived at the place where we had arranged for the horses to meet us; and going ashore with our baskets and food for the day, we at once started for the pinal or pine woods, where we purposed spending the day. After riding some distance through fields covered with grain, some being planted with fig and apricot trees, and through olive gardens, the road being a mere bridle-track, only available for horses and the rough native carts, we arrived at a pine wood, but there we found but few nests, and indeed up to lunch time we took no nests but those of the Woodchat Shrike (*Lanius pomeranus*), Common Bunting (*Emberiza miliaria*)—the eggs all much incubated, and one nest of the Black Kite.

The country here was very beautiful, large pine trees growing here and there, the intervening space being overgrown with large cistus-bushes, profusely covered with flowers—white, red, yellow, and white with a red centre—and everywhere wild flowers grew in rich profusion, amongst which the most noticeable were a sort of rose campion and a rich yellow chrysanthemum-like flower with a deep purplish-brown centre. We also saw patches of a large plant with a leaf like an amaryllis, which our guide told us was a sort of garlic, bearing a long purplish flower. Whilst at lunch we were joined by a keeper, who showed us a Black Kite's nest, out of which we took two eggs, and a little later on we found a nest of a Kestrel (*Falco tinnunculus*) containing five eggs. Both these nests, as well as others of the Black Kite which we also found, were built in pine-trees and were by no means easy to take, for these pines are invariably denuded of their branches, except the very top ones, as they grow, and consequently they are smooth and branchless except at the top, and as most of the trees in which we found nests were from thirty to fifty feet high, it was no joke to swarm up them, and we had good cause to regret not having brought climbing-irons with us. Late in the afternoon we

met a couple of goat-herds, one of whom, on being asked if he knew of any nests, told us that not far off was a nest of the Short-toed Eagle, but he thought that it contained a young bird. However, on going with him to the nest, he climbed the tree for us, and brought down an egg, which proved to be much incubated. The nest was tolerably large, and placed in the very top of a rather large pine, which stood rather apart from the adjoining trees. The old bird flew round close enough to enable us to recognise it perfectly well, so we did not shoot it. The goat-herd called this eagle the 'One-egg Eagle'—a very apt designation, as it always lays one egg only.

On our way back to the launch we passed a bank in which were numbers of Bee-eaters' holes, and many of these birds were flying round, but as yet there were no eggs. Many Hoopoes (*Upupa epops*) were seen, and a nest we examined, which was in a hole at the foot of an old olive tree, contained young birds nearly fledged. The Common Bunting appears to be very numerous here, and we found several nests; all the eggs, however, were too much incubated to be preserved. We also noticed a Booted Eagle (*Aquila pennata*) flying round, but did not succeed in finding any nest of this species.

In the evening we blew the eggs, and discussed matters as to what we should do next week, eventually deciding that I should go the next day up to Seville and arrange for permission to visit some of the 'cotos,' or large tracts of land kept for sporting purposes, and that the Colonel should take the men and visit a pine wood in another direction to that where we had been to-day. Accordingly, on the morrow (12th May), after seeing them off, I started for Seville, where I spent most of the day, and succeeded in getting the required permission and a good deal of useful information. We had arranged to meet in the evening at Coria, but I arrived there rather early, and went ashore to examine the place at my leisure. As the town was not particularly inviting, I strolled with our skipper to a large factory outside the town, where we met a very pleasant fellow, a Belgian, who carried on an extensive poultry and rabbit farm. He had some very large incubators, and told me that he had several times hatched out Bustards' eggs, two of which he then had in one of his incubators. With him we went through the orange gardens, and for the first time I tasted and greatly appreciated the sweet lemon, of which fruit he gave me a supply to take back to the launch.

On our way back to the town I examined some of the houses burrowed in the perpendicular cliff near the town, which are not uncomfortable, and one or two contained quite large rooms, the

only inconvenience being the smoke, which had to find its way out to the front of the house, which was boarded in, leaving an aperture at the top for the escape of the smoke.

Late in the evening, Barclay returned with four nests and eggs of the Azure-winged Magpie (*Cyanopica cooki*), two of the Black Kite, and two eggs of the Booted Eagle (*Aquila pennata*), the nest being an old Kite's nest, which the Eagle had repaired and utilised, and which contained three Kite's eggs. He also brought the old Eagle, two young Buzzards (*Buteo vulgaris*), one Dartford Warbler (*Melizophilus undatus*), and five Genets—two adult and three young. The weather was on the whole fine and hot, but there had been two or three heavy showers.

The next morning (13th May) we breakfasted at six, but as it had rained in the night, and looked dull, we decided not to go to the pine woods, but visited some woods near the town. We dug out two Bee-eaters' nests, but found no eggs. We saw numbers of Calandra Larks, Bee-eaters, Turtle Doves (*Turtur communis*), Azure-winged Magpies, Cetti's Warblers (*Cettia sericea*), and a few Hoopoes, and we watched a couple of the latter toying about like a pair of large butterflies, and the Colonel shot one of them. I was not very well to-day, so returned to the launch, and laid up all the afternoon. Towards evening some boys brought a lot of Turtle Doves and Quail (*Coturnix communis*), which they offered for sale, and we purchased several of the latter for our supper. To-day we took eggs of the Woodchat Shrike, Azure-winged Magpie, and Corn Bunting.

At four o'clock on the following morning (14th May) we started down the river, and arrived at Bonanza at about eleven. On the way we saw numbers of Duck, chiefly Marbled Duck, Black Tern, Harriers, etc. The weather was bright and very hot, and the sky cloudless. On arrival at Bonanza we went ashore, and walked up to San Lucar, a distance of about two miles. The road was ankle-deep in dust, and it was a very hot tiring trudge up to the town. The wild flowers were lovely, and a large mesembrianthemum, which covered the sand-banks at the road-side, was especially lovely. Arrived at the town, we visited a banker, to whom we had a letter of introduction, and from him obtained particulars as to where we could procure permission to ramble about and collect in one of the large cotos. The town, like all the smaller Spanish towns, was badly paved, the streets being scarcely fit for wheeled conveyances with springs, and the centre of the streets being evidently used as a gutter for the reception of sewage; but many of the houses were well-built and comfortable, almost all having a large open court-yard or

'patio,' in the centre planted with flowers or orange-trees. Outside the town were some large gardens filled with beautiful flowers, and scattered around were some large orange and lemon groves. We found a tolerably good inn near the Plaza, where we got our dinner and purchased some supplies, after which we returned to Bonanza, went on board the launch, and started up the river, where we again went ashore; and whilst Barclay walked along the shore, I, with one of the men, went inland to the cottage of one of the keepers, to whom we had a letter. As he was out we had to wait for him, and I soon made friends with the children and induced them to go out with me to hunt for eggs, but we found nothing but Magpies' nests, which were plentiful enough; but in one of these we found five Magpie's eggs and one of the Great Spotted Cuckoo (*Oxylophus glandarius*). On returning to the cottage we found the keeper had arrived, and after arranging with him to start off and obtain permission for us to go some distance inland with one of the under-keepers, we returned to the launch, got our supper, and turned in for the night.

Early the next day (15th May) we steamed up to a marsh some distance away, and went ashore with the men. Here we saw large numbers of the Ruhilla or Marbled Duck, and found two nests, containing only egg-shells, the Harriers having been there before us. Also a nest of the Mallard with only one egg, the others having likewise been sucked by Harriers. These nests were placed under low bushes on the low flat ground, which had been left dry when the water had receded, and some short distance away from the true marsh. In the marsh itself, where the water was nearly knee-deep, and where there were also low bushes and quantities of rushes and rank herbage, we found one nest of Montagu's Harrier with two eggs, one of the Marsh Harrier with three young in down, and saw numbers of Stilts, Whiskered Terns, Black Terns, and Grebes, and several Shags or Cormorants (*Phalacrocorax graculus*) passed overhead, flying towards the mouth of the river. Whilst wading through the marsh we came across four men, who were busy collecting eggs to take to San Lucar, where they offer them, hard boiled, for sale in the market, and through them we procured eggs of the Black Tern, Eared Grebe (*Podiceps nigricollis*), Little Grebe (*Tachybaptes fluviatilis*), Lesser Tern (*Sterna minuta*), and Marbled Duck. One of them caught a Baillon's Crake, in which, when we skinned it, we found an egg ready for exclusion. On our way back to the launch, as I was walking with one of our men, we flushed a Marbled Duck, which we shot, and on examining the place where she rose, we found a nest con-

taining fourteen eggs. The nest was placed under the bush, well hidden, and was constructed of small sticks and twigs and coarse grass, and well lined with down, and the entrance was made, not close to the bush, but a short distance away, through a small covered way amongst the long grass. We also procured another nest of the Marbled Duck with nine eggs, and in this nest there was scarcely any down. Besides these we took three Avocet's (*Recurvirostra avocetta*) eggs, several Stilts and Whiskered Terns, and two clutches of Redshank's (*Totanus calidris*). Early in the afternoon we returned to our old quarters, where we found the keeper, who had brought the necessary permission, and we at once proceeded to make arrangements for an early start in the morning, and as the Colonel wanted to attend to some business at Seville, it was finally arranged that I should take a three days' trip inland, taking one of our men with me, and that during that time he should go to Seville. We therefore steamed down to San Lucar, where we went ashore and purchased some corn and necessaries for the trip, and arranged for two horses to meet us early the following morning, and we then returned back, and turned in. On the next day (16th May) we were up at five, and after getting breakfast, I and one of our men were put ashore at the place where we had arranged for the two horses to meet us, and Barclay started for Seville. My baggage was very small, consisting of our two baskets, one filled with cotton-wool to pack the eggs we expected to procure, a plaid, half a small box of biscuits, a pound of chocolate, and a flask of whisky. I did not trouble to take any change of raiment, beyond a spare pair of socks, as the weather looked settled, and I am too old a campaigner to trouble about wet clothes; and the biscuits and chocolate, together with raw eggs beaten up in the cup of my flask, and flavoured with a little whisky, would be all I should need for more than a three days' trip, but for the men we had some bread, cheese, cold meat, sausages of a red colour, which I could not have touched to save my life as they were redolent with garlic, and a small pot in which they could cook any game they shot, as here such a thing as a close time seems to be unknown. Before the launch left, however, a girl, one of the keeper's daughters, brought us a few eggs, taken on the previous day, viz.:—one clutch Kite (*Milvus ictinus*), two Black Kite, two Booted Eagle, and one of three eggs of the Blackbird (*Turdus merula*). As might be expected the horses did not arrive at the time appointed, so I left the man to watch the baggage, and took a stroll to a neighbouring grove, where, during the hour we had to wait, I observed the following birds, viz:—Turtle Dove, Cuckoo (*Cuculus canorus*), Great Spotted Cuckoo, Golden Oriole (*Oriolus galbula*), Spotted

Flycatcher (*Muscicapa grisola*), Coal Titmouse (*Parus ater*), Nightingale (*Daulias luscinia*), Dartford Warbler, Black Kite, Common Kite, Roller (*Coracias garrula*), Red-leg Partridge (*Perdix rufa*), Swallow (*Hirundo rustica*), Crow (*Corvus corone*), Woodchat, and several small birds which I did not identify. After waiting an hour a young underkeeper arrived with two strong horses, on one of which were the usual large panniers, the other having on it a regular Spanish saddle, with large shovel-shaped stirrups, just like we used to have in Mexico, so I took possession of the steed, and found myself quite at home again in the Spanish saddle. Our baggage and the two baskets were packed in the panniers, and, Spaniard-like, Manuel, the underkeeper, perched himself on the top of the load, whilst I fastened the bag of corn behind my saddle. I carried only a light stick-gun, but our man Miguel had a long Spanish gun with him, and he and I arranged to ride and tie, as I preferred to walk as much as possible, and in places where the water was deep both men rode on the other horse, which seemed to carry them and the baggage with ease.

After going to the keeper's house to obtain a supply of fresh water, which we carried with us in an earthenware jar, we pushed on inland from the river through an undulating sandy country, and for some distance passed through a rather straggling growth of pine trees and bushes, and then entered into a succession of sandhills, where the nearly-white sand was ankle-deep and the walking very wearisome, especially as the sun was broiling hot. Amongst the pine trees we saw a couple of Booted Eagles, but found no nest, and several Black and Common Kites were also observed. A Common Kite's nest was next found, but as it contained young in half down, we left it untouched. Amongst the sand-hills were patches covered with bushes and grass, and generally small shallow ponds were in the middle of these patches, and from one of these we started a pair of Black Storks (*Ciconia nigra*), which are said not to breed anywhere near here, and soon after we saw both Black Vultures and Griffon Vultures (*Gyps fulvus*) circling round. Soon we rode through a long narrow fertile belt, well covered with trees, and in an open glade we saw some keepers' huts, and met one young fellow, who had shot several Red-legged Partridges which he showed us. In a more open part, where the trees were larger and more scattered, we first found a Kite's nest with young, and then a nest of the Spanish Imperial Eagle (*Aquila adalberti*), from which the old bird flew as I rode up to the tree, showing the white on the shoulders very clearly as she flew off. The nest was a large structure of sticks, lined with grass, and was placed in a main fork of a tolerably large

pine tree at an altitude of about thirty feet, and it contained two young birds half feathered, and the remains of a couple of rabbits; and below the nest, on the ground, were remains enough of rabbits to show that the Eagles had made sad havoc amongst the bunnies. I wished to leave the young birds, but Manuel insisted on killing them, so I took them along with us. After halting to rest the horses and take lunch, we again passed through some sand-hills, and, reaching a grass-covered tract, we kept along it for some distance, making for a laguna, where I was told we should find many birds breeding, and on which there was a boat that we could make use of. On this grassy tract were a few cork trees here and there, and from one of these we started a Little Owl, and we also saw a couple of Green Woodpeckers (*Gecinu sharpii*). At about four o'clock we reached the lagoon, and wading across the narrowest portion of it, we camped close to the ruins of a rough hut, which had been built to house sportsmen who come here to shoot Duck, but had been allowed to fall into decay. The lagoon extended some distance, and was fringed by marsh and high reeds, and we could see on an island in the middle some Purple Herons, but, oddly enough, we did not see any of the Egrets or Buff-backed Herons, which I fully expected to find here. After we had unloaded and picketed our horses, we went to hunt for the boat, but could not find it, so we tried to wade to the island, but the water was too deep, and the aquatic herbage was so dense that it was unsafe to attempt to swim to it, or I would have done so. We, therefore, waded about in the marsh, where we took a Montagu's Harrier's (*Circus cinereaceus*) nest with three eggs, and saw several Bitterns, but found no nest. At nine we made up a fire, and whilst one of the men cooked the food, I and the other man skinned the two young Eagles, and we then turned in, making a bed of a lot of half-dried bracken. Besides the birds above enumerated, we saw to-day the following species, viz., *Falco cenchris*, *Anas angustirostris*, *Sterna minuta*, *Hydrochelidon hybrida*, *Recurvirostra avocetta*, *Athene noctua*, *Circus æruginosus*, *Anas boschas*, *Galerita cristata*, *Gecinus sharpii*, *Fulica atra*, *Vanellus vulgaris*, *Merops apiaster*, *Œdicnemus scolopax*, and numbers of Flamingoes and Stilts.

During the night I was woke by a shepherd's dog, who came to see who was there, so there were evidently shepherds about, and at about six in the morning (17th May) we were visited by a shepherd and his boy and a gamekeeper, who told us that the boat had been taken away, and that we could not get on to the lake; so we decided to ride on further. The men breakfasted off a duck they had shot, and I contented myself with a couple of biscuits, a piece

of chocolate, and a little whisky and water. The country we passed through was flat, covered with bushes, chiefly cistus, which were covered with blossom, and here the yellow cistus predominated. We passed numbers of bee-hives, made of a section of cork bark, and we also visited several small water-holes, where we generally found large cork trees, in which were usually nests of the Kite or Green Woodpecker, but the latter breed very early, and in every case the young had flown. However, we found a nest of the Lesser Kestrel (*Falco cenchris*) in one large cork tree, and took out of it two very richly marked fresh eggs. We passed several shepherds and one told us that he had taken, a couple of days previously, a nest of the Norfolk Plover, with three eggs, which he had eaten. We saw several Green Woodpeckers, and their note appeared to me to differ considerably from that of our British species (*Gecinus viridis*), and to some extent reminded me of the call of the Wryneck. At about ten o'clock we reached a large grass-plain, on which we saw some herds of goats, besides horses and horned cattle; and ere long we reached a large hut, where we dismounted to get a glass of goat's milk. No one was at home but a woman, who was busy making goat's milk cheese, and who received us most hospitably, and gave us as much milk as we could drink. Ere long, a queer looking old man came in, who we found was quite dumb, and appeared to be rather 'soft,' but he seemed to be acting as herdsman, as he left with us and went to take charge of some cattle. From here we rode off to some large marshes, where we found numbers of Avocets, Stilts, Kentish Plover, Redshank, and Pratincole breeding, and where we set to work collecting eggs. The Pratincoles were especially numerous, and we rode for hours through half-dried mud and grass-covered plains, where they literally swarmed, and so numerous were their nests, that after a short time we only took eggs that were well marked. The Avocets were more scattered, and their nests were more difficult to identify, but we succeeded in marking several birds off their nests. Here the Stilts were breeding on the dry mud plains, not as we previously found them, in shallow water; and their nests when on the dry land were much smaller. The nests of the Avocet were very slightly constructed, and were mere depressions in the ground but scantily lined with grass bents. The Pratincoles make no nest, but deposit their three eggs in any convenient hollow in the ground, or on a piece of dry cow-dung, but I found three eggs in a tolerably well constructed nest, which appeared to me to be an old nest of a Redshank. The Redshanks eggs were almost all hard set, and we saw not a few young birds in down running about. Oddly enough, I did not see a single Lesser

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Ring Plover, for it was here that Mr. Abel Chapman, some years ago, found these birds breeding. The Pratincoles were very amusing; they would fly round us, and then settle on the ground, and after running some distance with high-uplifted wings, would throw themselves on the ground and lay for a few moments with outspread wings, like huge butterflies pinned on a board, and would then suddenly start up and circle round, uttering their alarm note *chirrick*, *chirrick*. Towards evening, on our way to our camping-ground, I was fortunate in securing a couple of young Stilts, about two or three days old, which I skinned. They had brown eyes, the beak livid blue, and the legs were livid plumbeous, with flesh colour showing through the blue tinge. We took several nests of the Mallard, and I ate two or three of the eggs beaten up in the cup of my flask, with a little whisky. Late in the evening we reached a small sandy island surrounded by shallow water, and camped for the night on a patch of sand, and as the men were unloading the horses I hunted round, and found two nests of *Motacilla flava*, and one of the Redshank, close to our camp. Whilst the men were cooking their supper, which consisted of eggs mixed up with garlic and some of the horrible red sausage, I examined the basket, and found that our bag consisted of seventy-five Pratincoles' eggs, thirty-seven Avocets', eight Kentish Plovers', and a few Stilts' eggs, besides several clutches of Short-toed Larks, Redshanks, and one of the Lesser Tern. The weather was clear and very hot all day, but a high wind was blowing, which made it very pleasant.

Just as we were settling down for the night we saw several Bee-eaters flying about the end of the island, and on going there we found about a dozen nest-holes in the flat ground, three of which we dug out, but found no eggs. The nests, or rather nest-holes, were about $4\frac{1}{2}$ ft. long, ending in a roundish chamber, which was about arm's depth below the surface. As it became dark the mosquitoes were very troublesome, and surrounded us in dense clouds, but they appeared to annoy the men much more than me, for I soon fell asleep and did not trouble myself about them; but ere long we were awoke by the cattle, who several times came to pay us a visit, and once or twice the bulls annoyed us considerably, and when driven off, kept walking round, bellowing loudly.

Soon after daybreak (18th May) we turned out, and the men cooked their breakfast, I, as usual, making a meal of a couple of biscuits, a piece of chocolate, and a couple of eggs beaten up with whisky. After wading some distance through the shallow water, we reached a long stretch of tolerably dry, grass-covered ground, and here, besides Stilts, Pratincoles, and Kentish Plover, we met with

a flock of Pin-tailed Sand-Grouse (*Pterocles alchata*), which were, however, very shy, and as we passed the place where we first observed them we found one egg placed in a mere depression in the ground, without any lining. We quartered the ground here most carefully, but though we found several Pratincole's nests, this was the only one of the Sand-Grouse we succeeded in discovering. After riding some distance, and passing through several large water-covered marshes, where we found some large colonies of the Whiskered Tern breeding, we reached the places where the Flamingoes bred, and where we saw several old nests, but though we saw large numbers of the birds, there was no sign of any recent nests; but we found one empty egg, which had probably been sucked by a Harrier.

From here we went over to the sandhills which we passed through two days previously, to reach which we had to wade for nearly a mile through water which reached nearly up to the horses' bellies. Here we halted for lunch under a large stone-pine, and whilst the men were resting and the horses feeding, I rambled round, but found nothing of interest, except a good-sized Land Tortoise, which I caught and packed in one of the baskets, and which we eventually brought home. Here there were several places where the wild hogs had been rooting, quite lately, but I did not meet with any. After lunch we started on, and, early in the afternoon, reached the keeper's house from where we first started, and having time enough to spare, we got a table put out under a tree, and blew eggs for a couple of hours or more, whilst the horses rested. The keeper's wife, who most hospitably offered us goat's milk, and in fact everything she had in the way of food, told me that there were several men in San Lucar who devoted most of their time during the spring to collecting eggs for the market, and told our man where we should find one old veteran who had collected for many years, and knew all the best nesting-places for many miles round the town. I had arranged for the launch to meet us at the landing-place between four and five, so we went there soon after four, and sent the horses away; but the launch did not put in an appearance till six o'clock, when we went aboard and steamed off to Bonanza, and at once started off on foot to San Lucar to hunt up the old egger. On the way we passed several cottages, the inmates of which were enjoying the rest of Saturday evening outside, and at one cottage a couple of pretty dark girls were dancing to the music of a guitar, which they accompanied with castanets, the rest of the party sitting down and keeping time by hand-clapping.

Arrived at the town, we soon found the old egger, who was with the rest of the family sitting in the 'patio,' listening to a young fellow

who was playing on the guitar and singing a rather wild kind of a song. When we explained what we wanted, he took us upstairs and showed us a basket of eggs which he was going to boil before taking to the market to-morrow morning, and out of these I selected about a dozen eggs of *Larus gelastes* and a few others, besides several which somewhat resembled the eggs of the Gull-billed Tern, but which he assured me were those of a Black-headed Gull (which, from his description, could be nothing else but *Larus melanocephalus*), and not of a Tern. Finding that the old man knew the birds of the country thoroughly well, I asked him to have a glass of wine, and to bring any other egg-collector he knew. He went out with us and soon found another egger, and we all adjourned to a queer old wine-shop, where I ordered a bottle of the white wine of the country and handed round my cigar-case. This opened their hearts, and they soon gave me lots of interesting information. He described the birds very well, and amongst others he described a Duck which he had shot off her eggs, and which I feel sure must have been *Erismatura leucocephala*. He also told me that he had found a red Duck, which he called 'Pato tarro,' and which from his description was *Tadorna casarca*, breeding in a rabbit-burrow on the other side of the river. About ten years ago, he told me, the 'Gallo azul' (*Porphyrio caeruleus*) used to breed in the marismas, but he had not seen one during the last four or five years, and did not believe that it is now to be found there at all. The lesser Herons also (*Ardea garzetta*, *ralloides*, and *bubulcus*) are now, he said, extremely rare, and last year he only knew of one small colony of the Buff-backed Heron. Amongst other things, he told me of a man who for years past had spent the summer in the marismas, where he collected eggs and fished, only coming to town to dispose of his eggs and fish, and told me where we should find him now. After spending an hour with these men we started back for Bonanza, where we arrived at about nine, and on going aboard the launch, found that Colonel Barclay had arrived back by rail from Seville, so we got our supper and turned in.

The next day being Sunday (19th May), we steamed up to the marisma, and rested there all day, and as it rained heavily, we were unable to leave the launch. Early the following morning (20th May) we sent our man to hunt up the old egger, whom he found located in a hut built of rushes, on the bank of the Caño, where his boat was moored, and who returned with him at 8.30. We soon made a bargain with him to take us to some breeding-places of the Gulls. We steamed some distance up the river, and then went ashore, and after walking some distance through the marsh, he took us to

a heronry, where, last year, the Buff-backed Heron bred, and where we saw about a dozen old nests built of sticks, and placed on low bushes, but we saw no Herons, and no new nests. Some distance further on we found a gullery, but the eggs had all been broken, and here we shot a Pratincole, an Avocet, and a Gull-billed Tern. As there seemed to be no prospect of finding eggs here, we returned to the steamer for lunch, and on the way took several nests of Kentish Plover, two of Pratincole, and one of Redshank; and were fortunate enough to find one Pratincole's nest, containing two newly hatched young birds, which I determined to try and keep alive. In the afternoon we steamed up to another marsh, and on the way our man shot a fine male Scoter (*Œdemia nigra*) from the launch, which we found had one foot damaged. At about three we went ashore to hunt for nests, and took two nests of Montagu's Harrier, two of the Marbled Duck with sixteen and fourteen eggs respectively, and three of the Mallard. In the evening we skinned our birds, and blew the eggs, turning in rather early. To-day the weather was cloudy but fine up to midday, after which it cleared up and became intensely hot. Next morning we made a start for another part of the marsh at 4.30, but did not turn out till nearly six. At seven o'clock we arrived at our destination, a large marsh, and going ashore we walked for a couple of miles through mud and water without finding any nests, though we saw several Gulls (*Larus gelastes*), and Terns. After passing several mud-flats covered with low bushes and coarse herbage, we reached a large shallow lagoon, through which we waded for about half a mile, to reach some small mud islands. The old man and I were some distance ahead when we approached the island, Barclay having gone off to try and shoot a Gull, and, as we came near the first low bushes, a gull flew up and circled close round us, and it certainly was a Black-headed Gull (*Larus melanocephalus*), as I could see quite well, but having only a light stick gun I could not shoot it. On going to the place where it flew up, we found, at the foot of a low bush, a nest containing three eggs like those of our Common Black-headed Gull, but smaller, the nest being made of small sticks, without any lining. We called Colonel Barclay to shoot the bird, but when he came up it had flown off, and though we saw it for some time, it would not approach within gun-shot range, and we could not secure it. A little further on we found a nest of *Larus gelastes* with two eggs, and Barclay shot the bird as she left the nest, and she is now in my collection. The nests of both species were constructed of sticks, those of *Larus gelastes* being somewhat stronger built, and invariably lined to some extent with Flamingoes' feathers, besides some of these feathers

being worked in the foundation of the nests. On the other hand, we found no feathers in the nests of *L. melanocephalus*, and in one instance two eggs were deposited on the ground, in a depression, without any sign of a nest. Here we found several more nests of *Larus gelastes* and *Larus melanocephalus*, which we took; and also several of *Recurvirostra avocetta*.

I may here state that on arrival in England we sent the eggs, which we firmly believe to be those of *Larus melanocephalus*, to Lord Lilford for inspection, and he considers them to be those of *Sterna anglica*, which they certainly resemble, but run rather larger than those in my collection of this Tern, and as we did not shoot the Gull, the question cannot be satisfactorily decided; but I trust at some future time to re-visit these parts and finally set it at rest.

We had arranged for the steamer to meet us at the other end of the marsh, so we started off to the place we had indicated, visiting several more small mud islands, but finding no more gulleries. Towards noon we caught sight of the steamer, and ere long met the skipper, who had walked on to find us. Here we found a long tract of dry ground bordering the river, and covered closely with grass and low bushes; and here we found several nests of the Pratincole and Kentish Plover, but nothing else of any note. Amongst the bushes the Clouded Yellow Butterfly was very numerous, and in parts close to the marsh, where the mud had only recently dried, and was baked and cracked by the scorching sun, I observed myriads of wood-lice and small black beetles. We went on board for lunch, after which we sent two of the men with a small net to catch some fish, and in a couple of hours' time they returned with a large bag full of fish, which closely resembled Grey Mullet, and some smaller ones like Roach, the former of which we found excellent eating.

We now had to think of starting back for Seville, so we settled with the old fisherman, who started on foot across the marshes for his hut on the Caño, and we steamed up the river for Coria, which town we reached late in the evening. On the way up we saw many Harriers, Black Terns, Black Kites, Bee-eaters, and also several Marbled Ducks. We remained all night at Coria, leaving early the following morning (22nd May) for Seville, and on the way up we were hard at work packing up our specimens and our portmanteaus, so as to have all ready to take on shore directly we arrived at Seville, as we wanted a little spare time to see the sights of Seville. We arrived there soon after nine, and paid off our men, sending our luggage to the Union Bank of Spain and England, as Mr. Drake, the manager of the bank, who had been most kind in assisting us in

every way ever since our first arrival at Seville, had undertaken to forward it to England for us. The rest of the day and the following day we spent at Seville, seeing the various places of interest in the town, and of course went up to the top of the Giralda, where we saw large numbers of the Lesser Kestrel and Swifts. I thought that I could distinguish the Pallid Swift, as well as *Cypselus apus*, and was assured that a few pale-coloured Swifts breed there together with the Common Swift.

On the evening of the 28th May we left Seville on our way home, viâ Madrid and Paris, after having had a most enjoyable trip, during which we collected over 500 eggs, besides a goodly number of bird-skins, and other specimens. I must not omit to say that I managed to keep the two young Pratincoles alive until after we left Seville, but the shaking in the train between Seville and Madrid was so great that they only survived the journey a very short time.

We received every possible assistance both in Seville and in other parts which we visited, and were especially indebted to Don Edmondo Noel, of Seville, who procured permission for us to visit and collect on several of the large estates or so-called 'cotos,' which are reserved for sporting purposes, and gave us a large map of the river and the surrounding country, which proved of the greatest use to us.

NOTES—BIRDS.

White Variety of the Little Gull at Flamborough.—On October 29th last a white variety of the Little Gull (*Larus minutus*) was shot by a fisherman off Flamborough Head, and was secured by Mr. M. Bailey for Mr. John Marshall's collection of varieties. It is not an albino, as the terminal bar on the tail is visible; the occiput and ear-coverts are faintly mottled, and the hue of the mantle is just perceptible.—J. H. Gurney, Jun., Keswick Hall, Norwich, January 6th, 1890.

Probable Occurrence of Phylloscopus superciliosus (Gm.) **near Spurn.**—I omitted to mention in my notes of last month that Mr. Hewetson, of Leeds, wrote me in October describing a small leaf-warbler seen and watched by him at early morning in his garden at Easington, and which he considered at the time could only be referred to this species. Subsequently Mr. Hewetson had an opportunity of seeing an Heligoland example of the Yellow-browed Warbler, which I have in a small case on the wall of my room, on seeing which he exclaimed at once, and before I had spoken, 'that is the bird I saw in my garden at Easington, the same conspicuous streak over the eye, and the two bars on the wing.'—John Cordeaux, Great Cotes, Ulceby, December 20th, 1889.

The Yorkshire Records for the Great Black Woodpecker.—Myths often die hard. Though the occurrence of the above bird at Ripley in March 1846 has been treated as more than doubtful in Messrs. Clarke and Roebuck's 'Handbook of Yorkshire Vertebrata' (1881), and elsewhere, it appears periodically to renew its youth like the phœnix. I find a reference to it in the September *Naturalist* of the present year, page 257. I can only say that, when resident in Yorkshire, I went, at the suggestion of Mr. J. H. Gurney, jun., to Ripley, and made the minutest inquiries, which satisfied me (and I believe Mr. Gurney) that if the bird in question was not the Greater Spotted Woodpecker (which appears to have done duty for *Picus martius* on several occasions) it was not a Woodpecker at all.—H. H. Slater, Irchester Vicarage, Northants.

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Papers and records published with respect to the Natural History and Physical Features of the North of England.

HYMENOPTERA, 1884 to 1889.

THE present instalment of about 43 titles, taken in conjunction with that of 33 published in 'The Naturalist' for May 1888, pp. 153-155, comprises a record of practically the whole of the work done by North of England naturalists in six years, so far as it has been directed to Hymenopterous insects. Workers in this department are few and scattered, and it is therefore a pleasure to note that amongst the papers published during the six years are such valuable lists as that for Cheshire from the pen of Mr. Newstead, that for Kirton-in-Lindsey by Mr. George, and those of Sawflies near York by the late Mr. Thomas Wilson, as evidencing some systematic attention having been paid within our area to so neglected an order.

ANON. [not signed]. **Durham, Northumberland S.**

List of . . . Donations to the Museum . . . of the Natural History Society [of Newcastle-on-Tyne], from June 1877 to August 1887 [in 1885, Wasps and Wasps' nests, *Vespa germanica*, *V. britannica*, *V. sylvestris*, and *V. rufa*, from Harnam and Bradford, near Belsay (Chas. Robson); nest of Wasp (*Vespa*, species not stated), Oakfield, Gosforth (Wm. Cochrane)]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 9, part 2 (1888), p. 286.

ANON. [not signed]. **Linc. N.**

Louth Naturalists' Society [; *Megachile lignisecа*, *Halictus rubicundus*, *Ichneumon trilineatus*, and *Ophion luteus* noted as occurring in district]. Nat. World, Aug. 1886, iii. 158.

J. B. BRIDGMAN. **York S.W.**

Additions to the Yorkshire List of Ichneumonidæ [*Campoplex unicinctus* Holmg., and *C. trisculptus* Holmg. from Green Farm Wood near Doncaster, 31st May, 1884]. Nat., Jan. 1887, p. 20.

PETER CAMERON. **Cheshire.**

Cheshire Sawflies [*Nematus fagi* Zadd. and *Eriocampa annulipes* from Sale]. Nat., March 1887, p. 66.

JOHN T. CARRINGTON. **York N.E.**

Sirex gigas in Yorkshire [writer has seen occasional specimens among fir woods at Sandburn, where it doubtless breeds regularly]. Ent., March 1889, xxii. 77.

T. D. A. COCKERELL. **Cheshire.**

A September Walk through . . . Cheshire . . . [*Cynips rosæ*, gall noted between Chelford and Congleton, Sep. 11th, 1885]. Nat., Feb. 1886, p. 57.

N. F. DOBRÉE. **York S.E.**

Sirex juvencus at Hull [in Aug. 1887]. Nat., Feb. 1888, p. 51.

C. WOLLEY DOD. **Cheshire.**

Wasps [abundant, and destructive to fruit, near Edge Hall, Malpas, West Cheshire; details given]. Field, Sep. 17th, 1887, p. 478.

JOHN W. ELLIS. **Cheshire.**

Entomological Localities near Liverpool [the only reference to Hymenoptera is that Wallasey sand-hills are the haunt of *Colletes cunicularia*, found, writer believes, nowhere else]. Ent. Mo. Mag., Aug. 1886, xxiii. 61.

E. A. FITCH. **Lanc. S.**

[Isosoma orchidearum Westw., an Eurytomid bred from knots in stems of *Cattleya trianæ* in an orchid-house at Southport]. Ent. Soc. Lond., May 7th, 1884; Zool., June 1884, p. 240.

[W. W.] FOWLER. **Northumb. S., Cheviotld., Durh., York N.E.**

Migration of Insects [extracts from the Migration Report, 1886: Tees 5th Buoy Light-vessel, April 30th, 1886, wind E., light, 'a great many Bumble-bees and a few Wasps during day, flying to N.W., several remained on board.' Coquet Island Lighthouse, Sep. 12th, W. (5).—'Hundreds of small flies all night in lantern']. Ent. Mo. Mag., Feb. 1888, xxiv. 205.

HILDERIC FRIEND. **Cumberland.**

A Contribution to the Life-History of Lophyrus Pini [as observed near Wigton in Cumberland, infesting *Pinus sylvestris*; elaborate details of life-history as noted in confinement]. Young Nat., Feb. 1889, pp. 33-35, and March, pp. 47-48.

J. GARDNER. **Durham.**

Ravages of Lophyrus pini [at Shernton, about eight miles from Hartlepool, where a small plantation of young Scotch firs were much infested; specimens named by Peter Cameron]. Ent. Mo. Mag., Nov. 1888, xxv. 131.

WILLOUGHBY GARDNER. **Cheshire.**

Sirex [juvencus] in North Wales and Cheshire [for many years established in a small fir-wood at Rock Ferry]. Ent., April 1889, xxii. 117.

C. F. GEORGE. **York S.E.**

The Yorkshire Naturalists' Union at Spurn Point [3rd Sep. 1884: *Pompilus plumbeus* noted in some abundance; named by E. Saunders]. Nat., Nov. 1884, p. 92.

C. F. GEORGE. **? Linc. N.**

A Strange Wasp's Nest [with a bird's leg built into it; presumably near Kirton-in-Lindsey?]. Sci. Goss., Dec. 1887, p. 283.

C. F. GEORGE. **Linc. N.**

Aculeate Hymenoptera in North Lincolnshire [an enumeration of 11 Fossores, 5 Diploptera, 40 Anthophila, and *Sirex juvencus*, taken about Kirton-in-Lindsey]. Nat., April 1888, p. 107.

JAMES HARDY. **Northumberland.**

Report of meetings of Berwickshire Naturalists' Club, for the year 1885 . . . Rothbury [June 24th; insects destructive to Sir W. Armstrong's pines supposed to be *Lophyrus pini*; *Formica flava*]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 35 and 41.

W. HEWETT. **'York.'**

Sirex gigas in Yorkshire [fairly common near York, July and August 1888]. Ent., March 1889, xxii. 76.

H. WALLIS KEW. **Linc. N.**

Notes from the Greensand [at Donington-on-Bain, July 7th, 1886; *Megachile circumcincta* Lep., and *Sphecodes gibbus* L., noted]. Nat. World, Nov. 1886, iii. 202.

H. WALLIS KEW. **Linc. N.**

Pteromalus puparum near Louth [at Cawthorpe; parasitic on *Vanessa atalanta*; identified by E. A. Fitch]. Nat., July 1886, p. 213.

H. WALLIS KEW. **Linc. N.**

Hymenoptera at Louth, Lincolnshire [*Chrysis ignita*, *Gorytes mystaceus*, *Andrena albierus*, *A. albicans*, *Odynerus pictus*, and *Halictus subfasciatus*, identified by E. Saunders; and *Ichneumon trilineatus*, named by E. A. Fitch]. Nat., Nov. 1886, p. 347.

H. WALLIS KEW. **Linc. N.**

A Half-Day's Ramble on the Lincolnshire Coast [at Mablethorpe, April 3rd, 1886; *Ophion luteus* (named by E. A. Fitch) noted]. Nat., June 1886, p. 172.

H. WALLIS KEW. **Linc. N.**

Megachile ligniseca and Halictus rubicundus at Mablethorpe, Lincolnshire [localities given; indentified by T. D. A. Cockerell and W. F. Kirby]. Nat., Aug. 1886, p. 251.

H. WALLIS KEW. **Linc. N.**

Hymenoptera near Louth, Lincolnshire [*Abia sericea*, *Dolerus gonager*, *Tenthredo aucupariæ*, *Pimpla oculatoria*, *Ichneumon rufidens*, *Mesoleptus testaceus*, *Ichneumon celerator*, *Crabro cribrarius*, *Sphecodes gibbus*, and *Megachile circumcincta* noted, with localities and dates]. Nat., Sep. 1886, p. 276.

H. WALLIS KEW. **Linc. N.**

The Greasy-field and Grisel-bottom [near Louth; *Bombus terrestris*, *Vespa vulgaris* and *Ichneumon trilineatus* mentioned]. Nat. World, June 1886, iii. 101-103.

E. P. KNUBLEY. **York Mid W.**

Wasp-Nest destroyed by Great Tits [at Farnham near Knaresborough; details given; species of Wasp not ascertained]. Nat., Nov. 1889, p. 333.

W. J. LETALL. **Derbyshire.**

A City of Wasps [at Hackenthorpe near Sheffield, described and figured; attributed to 'a tree wasp, *Vespa* (*media*?)']. Nat. Hist. Journ., Nov. 15th, 1887, xi. 192.

JOHN R. MARSHALL. **? Westmorland.**

Dead Humble Bees under Lime Trees [in Dalham Tower Park; with editorial explanation]. Field, Aug. 13th, 1887, p. 283.

P. B. MASON. **Derbyshire.**

[A South-European Ant (*Crematogaster scutellaris* Oliv.) in Mr. Baxter's fernery at Burton-on-Trent, probably imported with cork]. Ent. Soc. Lond., June 5th, 1889; Ent., July 1889, xxii. 191; Ent. Mo. Mag., July 1889, xxv. 330; and Young Nat., July 1889, p. 151.

F. D. MORICE. **Lanc. S., Cheshire.**

Rare Aculeate Hymenoptera in 1889 [*Halictus atricornis* (both sexes) in a sandpit at Whalley, Aug. 1889; previously known for Cheshire, B. Cooke]. Ent. Mo. Mag., Nov. 1889, xxv. 434.

S. L. MOSLEY. **York S.W.**

[Captures in Holmfirth Valley, 10th June, 1889; *Formica fusca*, *Myrmica rubra*, *Andrena cineraria*, *A. fulva*, *Bombus terrestris*, and *Vespa sylvestris* cited]. Nat., July 1889, p. 203.

GEO. T. PORRITT. **York Mid W. and S.W.**

Sirex juvencus near Harrogate [and at Huddersfield]. Nat., Oct. 1887, p. 290.

L. RICHARDSON. **Cumberland.**

The Ascent of Cross Fell, Ap. 26th, 1886 [while sitting on the cairn, alt. 2,900 ft., a 'black bumbler' noted flying about]. Nat. Hist. Journ., Feb. 15th, 1888, pp. 13-14.

GEORGE ROBERTS. **Yorkshire.**

Topography and Natural History of Lofthouse and its Neighbourhood [etc.]. Vol. ii. Leeds: printed for the author, 1885 [viii+258 pages, 8vo; with references to Hornet (p. 27); *Sirex gigas* (pp. 27 and 149); Black Ants (p. 27); Humble-bees (p. 94); Yellow Ants (p. 116); *Vespa britannica* (p. 135); *Cryptocampus* galls (p. 139); and Gooseberry Sawflies (p. 147)].

J. T. RODGERS (Oldham). **Lanc. S.**

Sirex juvencus at Oldham [two, taken in a cotton-mill, July 1887; introduced with the timber used for 'skips-clogs']. Young Nat., Oct. 1887, viii. 204.

WM. DENISON ROEBUCK. **York N.W.**

Abia sericea L. in Wensleydale [found as larva near Hawes, Aug. 1884, by Rev. G. P. Harris]. Nat., June 1885, p. 246.

W. D. ROEBUCK. **York S.W.**

The Yorkshire Naturalists' Union at Hatfield Chace [Sept. 21st, 1888; larvæ of *Trichiosoma vitellinæ* noted]. Nat., March 1888, p. 85.

York Mid W.

W. DENISON ROEBUCK, W. EAGLE CLARKE, and WILLIAM STOREY.

Upper Nidderdale and its Fauna . . . Hymenoptera [enumerated; four *Vespæ*, *Andrena fulva*, four *Bombi*, *Apis mellifica*, and *Sirex gigas*]. Nat., July 1886, p. 210.

C. B. ROUNTREE. **York S.W.**

Ackworth Natural History Exhibition, 1888 [Wood Ants (*Formica rufa*) in Brockendale]. Nat. Hist. Journ., Oct. 15th, 1888, xii. 158.

THOMAS WILSON. **York Mid W. and N.E.**

Hymenoptera near York in 1882 and 1883 [a list with annotations; including 5 *Tenthredina*, 2 *Dolerides*, 2 *Emphytides*, 10 *Selandriades*, 9 *Nematina*, 1 *Abia*, 1 *Hylotoma*, 1 *Lophyrus*, 1 *Ichneumon*, and 3 *Cryptidæ*]. Nat., Dec. 1884, pp. 115-117; and June 1885, p. 263.

THOS. WILSON. **York Mid W.**

Hymenoptera near York [notes on *Abia nitens*, *Tenthredopsis sordida*, and *T. nassata*, supplementary to former paper; Mr. Wilson's collecting-ground, though not here stated, was about Holgate and Acomb]. Nat., June 1885, p. 246.

THOMAS WILSON. **York Mid W.**

Hymenoptera Captured near York in 1883 and 1884 [being notes on *Tenthredopsis cordata*, *Athalia lugens*, *Emphytus serotinus*, *Blennocampa fuliginosa*, *Hemichroa rufa*, *Cladius eradiatus*, *Nematus croceus*, *N. cæruleocarpus*, *Cimbex sylvarum*, and *Trichiosoma lucorum*, all of which—except the two last—are new to Yorkshire, and raise the county list of Sawflies to 119 species]. Nat., Sep. 1886, pp. 257-259.

NOTE—FISHES.

Occurrence of the Short Sunfish and Torpedo off the East Coast.—A remarkably fine example of the Short Sunfish (*Orthagoriscus mola* L.) was brought into Grimsby recently, caught in the North Sea. Also a Torpedo (*Torpedo hebetans*); this last taken in a trawl from the Silverpit, off the mouth of the Humber. It measures 18½ in. in length, by 10 in. at its greatest breadth. On removing the skin the two batteries, or electric organs, were exposed on each side between the head and pectoral fins. These have, superficially, a honeycomb appearance, being formed of vertical hexagonal cells, filled with a clear gelatinous substance—these organs are connected with the brain by nerves of extraordinary size and capacity. Both these fish are now mounted in the small museum attached to the station of the Marine Fisheries Society at Cleethorpes.—JOHN CORDEAUX, Great Cotes, Ulceby, Jan. 13th, 1890.

Naturalist,

NOTES ON THE TREE SPARROW.

F. B. WHITLOCK,
Attenborough.

Judging from the perusal of the avifaunas of the North of England that I have in my possession, this bird (*Passer montanus*) does not seem to be at all common as a breeding species. There being quite a colony within easy distance of our village, I have had good opportunities for observing its habits during the breeding-season.

The colony is located in the stone facing of a canal wall, perhaps a third of a mile long, with a space of about three feet between the coping and the water-level. Weather and water have dissolved the mortar from between the stones, leaving many suitable nesting-sites. With the exception of a pair or two of Starlings, the Tree Sparrows have monopolised the whole of the situation. I have not been able to detect at present a single House Sparrow's nest, though the bird is abundant in the neighbourhood. This year (1889) nesting operations commenced in the last week of April, and by the 12th May many of the nest contained the full complement of eggs. Up to the end of the month it would have been still possible to have obtained fresh eggs, though some of the nests contained young birds. It is very difficult to get a perfect nest from the holes they are in, but those I have been able to examine were semi-domed in shape, like a Willow Wren's. Outwardly, they were loosely constructed of dry grasses, with a little straw and moss, and warmly lined with hair and a profusion of feathers collected from the neighbouring farm-yards. I found one nest containing young birds in a low dense bush only a foot from the ground.

The eggs, five or six in number, vary very much in their markings. The ground colour is white or occasionally pale-green, but usually so obscured by dark-brown or grey markings as to be almost invisible. Compared with those of the House Sparrow, they are, as a rule, much darker and smaller, though no doubt the measurements overlap. Perhaps the eggs they most resemble are those of the Meadow Pipit. A beautiful variety has the colour all massed at one end. At the nest the Tree Sparrow is a much shyer bird than its familiar ally, flying off at the least alarm, even when incubation is advanced.

The note is similar to that of the House Sparrow, but not so harsh, and shriller. It is curiously local in its breeding-haunts; though this colony contains perhaps fifty pairs, I have only twice

found its nest in other places in this neighbourhood. In the cana wall I have seen three nests within as many yards. Some years all the first eggs will be destroyed by a rise in the water; this was the case in 1876. I have not detected this species in the bunches of Sparrows offered for sale in our local market. I examined three dozen birds caught within a mile and half of the colony, but all were House Sparrows.

NOTES—LEPIDOPTERA.

Colias edusa, Vanessa cardui, and other Butterflies near Alford, Lincs.—Last season I captured three specimens of *Colias edusa*, all males, at Ailby, near Alford, on the 22nd and 28th August and 12th September. I also bred *Vanessa cardui* from larvæ found on *Cnicus arvensis* at Greenfield, 10th July. Hibernated individuals were numerous in April and May. I took *Melanargia galathea* at Well Vale on the 30th June and 2nd July. My other captures of butterflies round this town included *Pieris brassicæ*, *P. rapæ*, *P. napi*, *Anthocharis cardamines*, *Argynnis euphrosyne*, *Vanessa urticæ*, *V. io*, *V. atalanta*, *Pararge megæra*, *Epimephile janira*, *E. tithonus*, *E. hyperanthus*, *Chortobius pamphilus*, *Polyommatus phlæas*, *Lycæna alexis*, and *Hesperia sylvanus*.—EDWARD WOODTHORPE, Alford, 29th November, 1889.

Colias edusa near Arthington, etc.—On the 22nd of Sept. last, Mr. Oliver Stead, of Leeds, took a very pale female specimen of this butterfly near Arthington.

I will take this opportunity of recording that on the 2nd June, 1888, a specimen of *Vanessa cardui*, in splendid condition, as if just emerged, and not looking at all like a hibernated example, was picked up by my son near the church at Burley, Leeds; the day being dull and cloudy. On subsequent days I saw other specimens flying in my gardens at Burley.

During the past season (1889) I have been breeding *Abraxas grossulariata* from my gardens, and have obtained some very remarkable varieties.—CHARLES SMETHURST, Burley, Leeds, Jan. 8th, 1890.

NOTES—MOLLUSCA.

Possible Occurrence of Bulimus acutus in Cumberland.—A short time ago the Rev. Hilderic Friend, F.L.S., of Carlisle, sent me a number of shells from that neighbourhood, amongst them a couple of *Bulimus acutus*, a species hitherto not on record for Cumberland. Mr. Friend thinks they were from Silloth, and it is to be hoped that further search will confirm this record.—W. DENISON ROEBUCK, Leeds, Jan. 15th, 1890.

Mollusca near Spofforth, Yorkshire.—On Saturday, the 28th September, accompanied by my friend Mr. Pennington, of Spofforth, we spent several hours searching for Limnæidæ; and though late in the season for freshwater shells, we were successful to some extent. Our first efforts were searching the old fish-pond at Stockeld Park, where we were unsuccessful, not finding the least trace of a shell. We then searched a small weed-grown pond near to Crow Wood, and found *Planorbis contortus*, and two or three specimens of *Limnæa peregra*, which I think may be the *Limnæa limosa* of continental conchologists. Leaving here we made for Newsome Farm, and in a nearly dried-up pond we obtained *L. palustris*, *L. peregra*, and *Planorbis marginatus*. Passing over Newsome Bridge we searched a pond in a quarry, and here we obtained *L. peregra* of three rather distinct forms. We then went forward to North Deighton, and in an old pond procured rather fine specimens of *Limnæa stagnalis*, and amongst the Ivy-leaved Duckweed several immature *Sphærium corneum*. Returning by way of Newsome Bridge we searched the Old Crimple, where we found *Physa fontinalis*, rather common (at this time they were all young), *Planorbis albus* and *P. contortus*. Land-shells we did not search for with any degree of perseverance, or a much better list might have been made. The following are the species taken:—*Zonites cellarius*, *Z. alliarius*, *Z. glaber*, *Helix hortensis*, *H. hispida*?, *H. rotundata*, *Pupa umbilicata*, and *Clausilia rugosa*.—WM. NELSON, Leeds, Nov. 1889.

A PLEA FOR THE STARLING.

JOHN HARRISON,
Wilstrop Hall, Yorkshire.

THE long-continued depression so severely felt by agriculturists has been attended by changes that could scarcely have been reckoned upon twenty years ago. The passing of the 'Ground Game Act' enabled tenant-farmers to check the excessive increase of hares and rabbits, which on some estates were a constant source of disappointment, vexation, and loss. In fact, every subject connected with agriculture is freely discussed at Farmers' Clubs and Chambers of Agriculture, so that we may reasonably hope that most of the grievances which farmers have endured will sooner or later be redressed.

Sometimes, however, we hear them complain of annoyances which they—by united action—could speedily remove, for quite recently it was reported that some of the fen districts of Lincoln or Cambridge were infested by swarms of rats which were committing extensive havoc. But why were they allowed to increase and multiply to such an extent when the consequences might be clearly foreseen?

During last month, at the annual dinner of the Cheshire Farmers Club, the Secretary reported that sparrows were so numerous, that previous to last harvest, damage done by them to the wheat crop in the county of Chester was estimated at from four to ten bushels per acre. Certainly, with ordinary precaution, such a loss would not have been sustained. In the several parishes of this neighbourhood, it has been customary for more than half a century to pay one halfpenny per head for every sparrow destroyed, and the same sum for each nest of not less than four eggs, which effectually prevented their increase. This is what the Cheshire farmers have decided to do.

It was also stated at the above-mentioned meeting that starlings were injurious to the farmer, though in what particular way was not specified. This greatly surprised me, as I have had better opportunities than most farmers of observing their habits, as for the last twenty-five years not less than 150 to 200 pairs of starlings have annually made nests and reared their young in the farm premises contiguous to my house, and although some of the nests were in the garden walls, and within a few yards from where strawberries, raspberries, currants, and plums were ripening, the birds passed them by, preferring to search for grubs, worms, slugs, beetles, &c., in the lawn and adjacent pastures. During the breeding season especially, they were continually engaged from morn till dewy eve in clearing the fields of what are correctly termed 'pests of the farm.'

Equally unfounded is the notion that they commit a great deal of mischief in pigeon cotes, by pushing the young birds out of the nests and devouring the eggs. My experience on the subject leads to a directly opposite conclusion, as for more than thirty years I have kept a well-stocked pigeon cote close to the farm premises, and even placed eggs outside the cote, where the starlings were in quest of food, yet in not a single instance did they touch, or even notice the eggs, and after careful observation I am satisfied they do not disturb the pigeons in any way.

It is difficult to account for the prejudice which exists in the minds of some persons respecting birds. As a rule farmers are not close observers of their habits, although the subject is not unworthy their attention, and especially should they notice the several varieties which do not feed upon grain, lest, haply after compassing their destruction, the cultivators of the soil should find their fields and gardens infested by hosts of winged and creeping insects, doing incalculable damage, and baffling the most persistent efforts to exterminate them.

NOTES—BIRDS.

Shore-larks at Flamborough.—Twelve Shore-larks (*Otocorys alpestris*) were shot on the headland on Saturday, 21st December last, and several more were seen.—MATTHEW BAILEY, Flamborough, December 24th, 1889.

Storm Petrel near Alford in 1888.—On the 14th November 1888, Mr. Thomas Bishell, a gardener at Thoresthorpe, a hamlet adjoining Alford, observed a bird hovering about him as he was spreading fish manure—partly sprats. Thinking it was a Swallow—so unusual a visitor at that time of year—he watched until it alighted near him as if to feed on the fish. With a well directed throw his fork chanced to fall upon and hold the bird till he could seize it, apparently little harmed. After keeping it a couple of days he had it killed and stuffed. Mr. John Cordeaux and I saw the bird yesterday, and it is clearly *Procellaria pelagica* Linn. Mr. Bishell has since kindly given the specimen to me.—JAS. EARDLEY MASON, Alford, Linc., 24th January, 1890.

Dunlins and Ringed Plovers in Notts.—These two species occur very regularly on our part of the Trent every spring and summer. I am somewhat puzzled as to where their breeding-grounds lie.

The former species (*T. alpina*) arrives generally about 20th April, on its spring migration. It usually occurs in small parties of six or seven, in full breeding plumage. Compared with Scotch specimens, it is distinctly smaller, the length of bill being considerably less. By the middle of July the young are to be seen feeding on the shores of the Trent, some of them showing considerable traces of down on the neck.

The only high ground in this neighbourhood is the Charnwood Range, but this is a very unlikely ground on which to find Dunlins breeding. I have not met with them in the Derbyshire Peak. The direction of the spring migration is certainly against the stream of the Trent. Can it be that these are the Dunlins that breed in the marshes of the Dee?

The same remarks apply to the Ring Plover (*Ægialitis hiaticula*), except that its arrival in spring is rather later, and it does not differ in size from the normal variety; it is also less numerous.—F. B. WHITLOCK, Attenborough.

Naturalist,

AUTUMN BIRD-NOTES FROM NOTTS.

F. B. WHITLOCK,
Attenborough.

I FOUND Mr. Cordeaux's Humber notes particularly interesting. There is no doubt we get most of our autumn migrants viâ the Humber and Trent Valley. The direction of the spring migration, however, is not so clearly defined.

Tits. Our osier-beds by the Trent side during September and October have simply swarmed with Blue Tits (*Parus cæruleus*). Great Tits (*P. major*), Coal Tits (*P. ater*), and Long-tailed Tits (*P. caudatus*) have also been numerous. On October 6th I saw a flock of these four species cross a lane, numbering upwards of fifty birds. At the time of writing (January 2nd) Blue Tits are still numerous.

Great Spotted Woodpecker (*Dendrocopus major*). This has also occurred in our village (Attenborough), and I have heard of half a dozen Spotted Crakes (*Porzana maruetta*) being seen or killed during September and October. On September 4th a fine adult female was 'telegraph-wired' close to my house, no doubt during migration. On October 19th, an immature female was sent me, one of three killed just outside Nottingham. I have since heard of others.

Redpoles. The Lesser Redpole (*Linota rufescens*) breeds regularly with us. I have met with one small flock of *L. linaria*, out of which I killed a single male, showing traces of pink on the breast (November 28th).

Bramblings (*Fringilla montifringilla*) have been fairly numerous, judging from bird-catchers' reports.

Black Terns (*Sterna nigra*) only occur in the spring. I have seen as many as eight or nine in one afternoon. They occur regularly about the end of May, usually with *S. hirundo*.

Amongst other birds, the Peregrine (*Falco peregrinus*) and the Bittern (*Botaurus stellaris*) have both been shot near Gunthorpe in December. The former bird is a fine specimen. I take it to be a young male, the breast being sparingly streaked with dark brown. The expanse of the wings is about forty inches. Both the Peregrine and Bittern seem to occur every year. An Osprey (*Pandion haliaetus*) is reported in one of our local papers, but I have not yet been able to confirm this. A friend was at Hunstanton on November 6th; he reported an arrival of immense numbers of Lapwings (*Vanellus vulgaris*). This would be simultaneous with the arrival noted by Mr. Haigh.

Feb. 1890.

On November 9th I received from a shore-gunner an adult female Great Grey Shrike (*Lanius excubitor*) killed near Hunstanton. I saw Snow Buntings (*Plectrophanes nivalis*) on the Norfolk coast, October 17th.

STORM PETREL IN SUMMER.

Rev. H. A. MACPHERSON, M.A., M.B.O.U., Etc.,
Carlisle; Joint-Author of the 'Birds of Cumberland,' etc.

I am interested in Mr. Cordeaux's note of a couple of Storm Petrels seen off Spurn on August 20th, because it confirms a *suspicion* I have for some time entertained, that these small Petrels do not breed in their first year. The late Mr. Gatcombe recorded a male example of *Procellaria pelagica* obtained on June 22nd, 1883, at Plymouth. He also recorded one obtained on Sept. 7th, 1879, which is rather an early date for so late a breeding bird to have left its quarters. In the 'Field' of December 1886, Mr. W. Beckwith recorded a Storm Petrel obtained in Shropshire on July 16th; and I am sure that a special search would reveal other instances of this Petrel being found far away from its nesting haunts, *when* it ought to be breeding. With regard to Leach's Petrel (*P. leucorrhoa*) the case is similar.

I find that the late Mr. Heysham, of Carlisle, had a *fresh* specimen of this Petrel in his hands on July 31st, 1841, on which day he sent the bird to Blackett Greenwell, in order that 'he might examine a scarce British bird in the flesh.'

Again, in 1875, Mr. Dewar shot a Leach's Petrel on Loch Tay in the month of July (Proceedings of Natural History Society of Glasgow, 4, p. 68). These isolated instances of birds found a long distance from their breeding-stations are too meagre to be conclusive in any way; but I am glad to draw attention to a point that has not been thrashed out.

Perhaps I may add that in July last, in company with my friend Mr. F. P. Johnson, I visited an island haunt of *P. pelagica*, in order to dig out a nest for the National collection. This was accomplished successfully, and the nest, bird, and egg may now be seen in the museum at South Kensington, being one of the latest additions to the series of groups of breeding-birds. The Petrel's nests are not easy to discover, unless a terrier or two be introduced. The terriers at once detect the musky odour of the Petrel in a burrow, and scrape impatiently at the entrance. We only took two eggs, one for the museum, and one for Mr. Johnson, an example that many oologists would do well to follow.

LEPIDOPTEROUS FAUNA OF LANCASHIRE AND CHESHIRE.

JOHN W. ELLIS, M.B. (Vict.), L.R.C.P.E., F.E.S.,
Liverpool; late Honorary Secretary to the Lancashire and Cheshire Entomological Society; and to the Liverpool Naturalists' Field Club.

TINEINA.

Fam. *CHOREUTIDÆ.*

CHOREUTIS, Hüb.

Choreutis myllerana, F. = **scintillulana,** Hüb. Very local, being recorded only from Hoghton, near Preston (J.H.T.), Dunham Park and Moss Side (J.C.), and from a quarry between Poulton and Wallasey (C.S.G.).

Choreutis oxyacanthella, L. = **fabriciana,** Steph. Abundant everywhere among nettles.

Fam. *TALÆPORIDÆ.*

TALÆPORIA, Hüb.

Talæporia pseudo-bombycella, Hüb. Local, and recorded only from Cheshire:—Bidston Hill, on heath and tree trunks (C.S.G.); Bidston Heath (J.F.B.); Delamere Forest (J.B.H.); Dunham Park (J.C.); and Knutsford (H.H.C.).

SOLENOBIA, Z.

Solenobia inconspicuella, Staint. Local, and not common.

Lanc.—Preston (J.B.H.); Prestwich Wood, on beech (R. S. Edleston, Zool., xvii, 6463); Prestwich and Pendlebury (J.C.).

Ches.—Jackson's Wood, Claughton (C.S.G.); Wirral (J.F.B.).

Solenobia triquetrella, Fisch. Very local on the Lancashire and Cheshire moors, such as Withnell and Staleybrushes (J.B.H.).

Fam. *TINEIDÆ.*

DIPLODOMA, Z.

Diplodoma marginepunctella, Steph. Local, and not common.

Lanc.—Cleveleys (J.H.T.); Preston (J.B.H., J.H.T.); on old posts near Simmonswood Moss (C.S.G.).

Ches.—Rock Ferry (J.F.B.).

XYSMATODOMA, Z.

Xysmatodoma melanella, Haw. Very rare, and recorded only from three localities in Cheshire, viz., Bowdon (J.H.T.), Eastham Wood (J.F.B.), and Prenton Wood, near Birkenhead, a single specimen (C.S.G.).

BLABOPHANES, Z.

Blabophanes imella, Hüb. Rare.

Old posts on Linacre Marsh (a locality now built upon), three specimens (C.S.G.); Manchester (J.C.).

Blabophanes ferruginella, Hüb. Local, all the records being from Lancashire: Kirkby Wood, in rotten fir-logs (C.S.G.); Lytham (J.B.H., J.H.T.), and Manchester, in drysalteries and granaries (J.C.).

Blabophanes rusticella, Hüb. Common everywhere.

TINEA, Z.

Tinea fulvimitrella, Sodof. Not uncommon.

Lanc.—Agecroft and Prestwich (J.C.); Manchester (J.H.T.); Pighue Lane, Wavertree (C.S.G.).

Ches.—Dunham Park (J.C.) and Staleybrushes (J.B.H.).

Tinea tapetzella, L. Abundant everywhere in woollen materials.

Tinea arcella, F. Not common.

Lanc.—An old hedge near Little Britain, Kirkby (C.S.G.); Longridge and Penwortham (J.B.H.); Preston and Wardless (J.H.T.); Manchester district (Staint. Man. ii, 290).

Ches.—Puddington, scarce (J.F.B.).

Tinea corticella, Curt. Generally distributed.

Lanc.—Levenshulme (H.H.C.); Manchester district (Staint. Man. ii, 291); Penwortham and Warrington (J.B.H.); Preston district (J.H.T.).

Ches.—Bowdon (R. S. Edleston, Zool. 1857, 5719); Cheadle Hulme (H.H.C.); Dunham Park (J.C.); Daresbury (J.B.H.); Puddington, scarce (J.F.B.).

Tinea parasitella, Hüb. Recorded only by Mr. Brockholes as scarce at Bidston.

Tinea picarella, Clerck. Manchester district (Staint. Man., ii. 290).*

Tinea granella, L. Common throughout both counties in grain warehouses.

Tinea cloacella, Haw. Local.

Lanc.—Chat Moss and Prestwich (J.C.); Knowsley and Kirkby (C.S.G.); Levenshulme (H.H.C.); Preston (J.B.H., J.H.T.).

Ches.—Dunham Park (J.C.); Wirral (J.F.B.).

* The list of Lepidoptera occurring in the Manchester district was supplied to Mr. Stainton by Mr. R. S. Edleston, who was an accomplished micro-lepidopterist.

Tinea albipunctella, Haw. Very local and not common.

Lanc.—Cleveleys (J.H.T.); Grange (J.B.H., J.H.T.); one at Brockholes Wood near Preston (J.B.H.).

Ches.—Bidston, scarce (J.F.B.).

Tinea confusella, H.S. Recorded only from Morecambe, by Mr. Threlfall.

Tinea nigripunctella, Haw. Mr. Gregson records the capture of two specimens at Wallasey, and Mr. Threlfall's record 'Liverpool' probably applies to these.

Tinea misella, Z. Very local, being recorded only from Huyton near Liverpool (J.H.T.); and Tranmere, in granaries (C.S.G.).

Tinea fuscipunctella, Haw. Abundant everywhere.

Tinea pellionella, L. Abundant everywhere.

Tinea pallescentella, Staint. Abundant in warehouses.

Tinea merdella, Z. Occurs in wool warehouses, being first discovered and described as British by the late Nicholas Cooke.

Tinea lapella, Hüb. Local.

Lanc.—Grange and Preston (J.H.T.); Liverpool district, in old hedges (C.S.G.); Manchester district, frequent (H.H.C.); Pendleton and Eccles (J.C.).

Ches.—Wirral (J.F.B.).

Tinea semifulvella, Haw. Local.

Lanc.—Chat Moss (J.C.); Grange (J.B.H., J.H.T.).

Ches.—Cheadle Hulme, occasionally (H.H.C.); Claughton Park fences, and bred from old birds'-nests (C.S.G.); Dunham Park and Knutsford (J.C.).

Tinea argentimaculella, Staint. Recorded from Bowdon by Mr. R. S. Edleston (Zool., 1858, xvi. 6214) and Mr. Threlfall.

PHYLLOPORIA, Hein.

Phylloporia bistrigella, Haw. Very scarce, being recorded only from Birch Wood, Woolton (C.S.G.), and Grange (J.H.T.), both in Lancashire, and as scarce at Bidston (J.F.B.) in Cheshire.

TINEOLA, H.S.

Tineola biselliella, Hummel. One of the most abundant of 'clothes-moths.'

LAMPRONIA, Z.

Lampronia morosa, Z. = **quadripunctella,** Steph. Common and generally distributed.

Lampronia luzella, Hüb. Recorded only from two localities, both in Lancashire: Grange (J.B.H. in litt. and Ent., x, 40) and Withington (J.C.).

Lampronia prælatella, Schiff. Local, and only in Lancashire. Brockholes Wood near Preston (J.B.H.), Grange (J.H.T.); Manchester district (Staint. Man., ii, 296); and Withington (J.C.).

Lampronia rubiella, Bjerk. Fairly common.

Lanc.—Barton Moss (J.C.); Brockholes Wood (J.B.H.); Grange (J.H.T.); Liverpool district, in old gardens among raspberries (C.S.G.).

Ches.—Marple and Delamere Forest (J.C.).

INCURVARIA, Haw.

Incurvaria musculella, F. Common and generally distributed.

Incurvaria pectinea, Haw. Local.

Common among birches in April, in the Liverpool district (C.S.G.); Grange (J.H.T.); Windermere (J.B.H.).

Incurvaria tenuicornis, Staint. Recorded from the Manchester district (Staint. Man., ii, 297) and from Preston (J.B.H.).

Incurvaria capitella, Clerck. The only notice of the occurrence of this species in our district is in Stainton's Manual (ii, 297), the locality being Manchester.

Incurvaria Œhlmanniella, Tr. Local, and not common.

Lanc.—Birch Wood, Woolton (C.S.G.); Grange (J.H.T.); Manchester district (Staint. Man., ii, 297); Preston district (J.B.H.).

Ches.—Bidston and Hooton, scarce (C.S.G.).

Incurvaria canariella, Staint. Near Grange (J.B.H.).

NEMOPHORA, Hüb.

Nemophora Swammerdamella, L. Locally abundant.

Lanc.—Grange and Silverdale (J.H.T.); Prestwich (J.C.).

Ches.—Alderley, Bramall, and Taxal (H.H.C.); Dunham Park, Knutsford, and Delamere (J.C.).

Nemophora Schwartziella, L. Locally common.

Lanc.—Liverpool district (C.S.G.); Lake side, Windermere (J.H.T.).

Ches.—Dunham Park and Knutsford (J.C.); Eastham Wood (J.W.E.); Taxal (H.H.C.); Wirral (J.F.B.).

Nemophora pilella, F. Recorded from the Longridge moors (J.H.T., J.B.H. in litt. and Ent., xiii, 164).

Nemophora metaxella, Hüb. Longridge moors (J.B.H. in litt. and Ent. xii, 204) and Salwick near Preston (J.H.T.).

Fam. *ADELIDÆ*.

ADELA, Latr.

Adela fibulella, F. Local.

Lanc.—Glazebrook and Withington (J.C.); Grange (J.H.T., J.B.H. in Ent. Mo. Mag., x, 40); Preston (J.B.H.).

Ches.—Patrick Wood near Bromborough (C.S.G.).

Adela rufimitrella, Scop. Local.

Lanc.—Glazebrook (J.C.); Howick near Preston (J.B.H.); Preston (J.H.T.); Manchester district (Staint. Man., ii, 299).

Ches.—Bidston Marsh, on flowers of *Cardamine pratensis* (C.S.G.); Bollin Valley (J.C.).

Adela DeGeerella, L. Very local, being recorded only from Rainford Moss (C.S.G.), and Worsley and Woolden Woods (J.C.).

Adela crœsella, Scop. = **sulzella,** Schiff. Brockholes Wood near Preston (J.B.H.).

Adela viridella, Scop. Locally common.

Lanc.—Grange (J.H.T.) and Preston (J.B.H.).

Ches.—Dunham Park, Knutsford, and Delamere Forest (J.C.); Woodford and Bramall, local (H.H.C.); Eastham Wood (C.S.G., J.W.E.).

Adela cuprella, Thunb. Recorded only by Mr. Chappell, from Dunham Old Park.

NEMATOIS, Hüb.

Nematois cupriacellus, Hüb. Manchester district (Staint. Man., ii, 301).

Nematois minimellus, Z. Longridge and near Ribchester (J.B.H. in litt. and Ent., xiii, 105).

Fam. *OCHSENHEIMERIDÆ*.

OCHSENHEIMERIA, Hüb.

Ochsenheimeria birdella, Curt. Local.

Lanc.—Blackpool (R. S. Edleston, Intell., 1859, ii, 27); Preston (J.B.H., J.H.T.).

Ches.—Bramall and the Bollin Valley (J.C.); plentiful in a field opposite Hose Farm, Liscard (C.S.G.); near Seacombe (J.F.B.).

Ochsenheimeria bisontella, Z. Local.

Lanc.—Lees, near Oldham (J.C.); Longridge (J.B.H., J.H.T.); Manchester district (Staint. Man., ii, 288); near Ribchester (J.B.H., Ent., xiii, 105).

Ches.—Recorded from Bidston Lighthouse (C.S.G.).

Ochsenheimeria vaculella, Fisch. Manchester district (Staint. Man., ii, 288).

Fam. *TEICHOBIDÆ.*

TEICHOBIA, H.S.

Teichobia verhuellella, Staint. Recorded only from the coast of North Lancashire: Old lanes near Cleveleys, not uncommon on hart's tongue (J.B.H., J.H.T.); Grange (J.H.T.).

Fam. *ACROLEPIDÆ.*

ACROLEPIA, Curt.

Acrolepia granitella, Tr. Local, and not common.

Lanc.—Grange (J.B.H.); Pendleton and Irlam (J.C.); Preston and Cleveleys (J.H.T.).

Ches.—One specimen taken at Bidston or Claughton (J.F.B.); two specimens taken by Mr. Edmondson at Liscard, near the Trafalgar Hotel (C.S.G.).

Acrolepia pygmæna, Haw. Grange (J.B.H.).

Fam. *HYPONOMEUTIDÆ.*

SCYTHROPIA, Hüb.

Scythropia cratægella, L. Manchester district (Staint. Man., ii, 307); Stretford near Manchester (J.C.).

HYPONOMEUTA, Z.

Hyponomeuta plumbellus, Schiff. Recorded from Grange (J.B.H., J.H.T.).

Hyponomeuta padellus, L. Locally common.

Lanc.—Grange (J.B.H.); Manchester, common (J.C.); Greenbank near Liverpool (J.W.E.).

Ches.—Cheadle Hulme, abundant (H.H.C.); Upton, near Birkenhead (C.S.G.); Wirral (J.F.B.).

Hyponomeuta cagnagellus, Hüb. = **evonymellus,** Scop., Staint. Local.

Lanc.—Grange (J.B.H.); Longridge (J.H.T.).

Ches.—Bollin Valley and near Castle Mill (J.C.); Claughton (J.F.B., C.S.G.).

Hyponomeuta evonymellus, L. = **padi,** Zell. Locally common.

Lanc.—Grange (J.B.H.); Hale (C.S.G.).

Ches.—Bramall, abundant (H.H.C.); Marple, Bramall, and Reddish (J.C.).

SWAMMERDAMIA, Hüb.

Swammerdamia combinella, Hüb. = **apicella,** Don. Local.

Lanc.—Grange (J.B.H.); Liverpool district, common among blackthorn (C.S.G.); Manchester, common (J.C.).

Ches.—Wirral (J.F.B.).

Swammerdamia griseocapitella, Staint. Local.

Lanc.—Chat Moss (J.C.); Grange and Silverdale (J.H.T.); Rainford Moss (C.S.G.).

Ches.—Bidston and Puddington, occasionally (J.F.B.); Cheadle district, abundant (H.H.C.).

Swammerdamia oxyacanthella, Dup. = **cæsiella,** Staint. Local.

Lanc.—Grange (J.B.H.); Manchester district, common (J.C.).

Ches.—Claughton and Prenton (C.S.G.); Liscard (J.W.E.).

Swammerdamia lutarea, Haw. Recorded only from Tranmere, near Birkenhead (J.F.B.).

Swammerdamia pyrella, Villers. Common and generally distributed.

PRAYS, Hüb.

Prays curtisellus, Don. Generally distributed.

Lanc.—Grange (J.H.T.); Liverpool district (C.S.G.); Manchester district, common (J.C.); Preston (J.B.H., J.H.T.).

Ches.—Cheadle Hulme, common (H.H.C.); Wirral (J.F.B.).

ZELLERIA, Staint.

Zelleria hepariella, Staint. Recorded only from Grange (J.B.H., J.H.T.).

Zelleria insignipennella, Staint. Recorded only from Grange (J.B.H., Ent. Mo. Mag., xii, 163).

ARGYRESTHIA, Hüb.

Argyresthia ephippella, F. Very local, being recorded only from Grange (J.B.H., J.H.T.), Windermere (J.B.H.), Manchester (Staint. Man., ii, 369), and a single specimen from an un-noted locality near Birkenhead (J.F.B.).

Argyresthia nitidella, F. Abundant everywhere.

Argyresthia semitestacella, Curt. Local.

Lanc.—Croxteth Park, among beeches (C.S.G.); Grange and Windermere (J.B.H.); Irlam (J.C.).

Ches.—Wirral (J.F.B.).

Argyresthia albistria, Haw. Local.

Lanc.—Grange and Windermere (J.B.H.); Irlam and Withington (J.C.); Preston, common (J.H.T.).

Ches.—Between Hose side and Wallasey village (C.S.G.); Wirral (J.F.B.).

Argyresthia spiniella, Z. Recorded from Grange and Windermere (J.B.H.); Manchester (Staint. Man., ii, 369); Simmonswood Moss and Bidston Hill (C.S.G.).

Argyresthia conjugella, Z. Generally distributed.

Lanc.—Chat Moss (J.C.); Grange and Windermere (J.B.H.); Liverpool district, among mountain ash (C.S.G.).

Ches.—Bidston Hill (J.F.B.); Staleybrushes (J.C.).

Argyresthia ærariella, Staint. Staleybrushes (J.B.H., J.H.T., Ent., xiii, 164). In berries of mountain ash.

Argyresthia semifusca, Haw. Local.

Lanc.—Grange and Windermere (J.B.H.); Preston (J.H.T.).

Ches.—Bidston Hill (J.F.B.); Cheadle Hulme, local (H.H.C.); Heswall (J.W.E.).

Argyresthia mendica, Haw. Local.

Lanc.—Grange (J.B.H., J.H.T.); Windermere (J.B.H.); Withington (J.C.).

Ches.—Wirral (J.F.B.).

Argyresthia glaucinella, Z. Local.

Lanc.—Wildbottoms, near Preston (J.B.H. in litt. and Ent. Mo. Mag., ii, 160).

Ches.—Bowdon (J.H.T.); Dunham Park (J.C.); Patrick Wood near Bromborough (C.S.G.).

Argyresthia retinella, Z. Local.

Lanc.—Chat Moss (J.C.); birch plantations near the Lancashire mosses (C.S.G.); Grange (J.B.H., J.H.T.); Windermere (J.B.H.).

Ches.—Cheadle Hulme (H.H.C.); Wirral (J.F.B.).

Argyresthia dilectella, Z. Grange (J.C., J.B.H.).

Argyresthia Andereggiella, Dup. Grange (J.B.H., J.H.T.) and Windermere (J.B.H.).

Argyresthia cornella, F. = **curvella,** Staint. Local.

Lanc.—Grange and Windermere (J.B.H.); Preston (J.H.T.).

Ches.—Bromborough and Frankby, on apple-trees (C.S.G.).

Argyresthia sorbiella, Tr. Local.

Lanc.—Chat Moss (J.C.); between Knowsley and Kirkby (C.S.G.); Windermere (J.B.H.).

Ches.—Dunham Park (J.C.).

Argyresthia pygmæella, Hüb. Local.

Lanc.—Chat Moss (J.C.); Grange and Preston (J.H.T.); Liverpool district, among sallows (C.S.G.); Windermere (J.B.H.).

Ches.—Flaybrick Hill and Tranmere (J.F.B.).

Argyresthia Gœdartella, L. Locally common.

Lanc.—Astley, Irlam, and Worsley (J.C.); Grange and Preston (J.B.H., J.H.T.); Liverpool district, among old birches (C.S.G.).

Ches.—Cheadle Hulme, common (H.H.C.); Wirral (J.F.B.).

Argyresthia Brockella, Hüb. Local.

Lanc.—Chat Moss (J.C.); Grange (J.B.H., J.H.T.); Liverpool district (C.S.G.); Levenshulme (H.H.C.); Windermere (J.B.H.).

Ches.—Bidston and Rock Ferry (J.F.B.); Dunham Park and Knutsford (J.C.).

Argyresthia arceuthina, Z. Grange (J.B.H.).

Argyresthia aurulentella, Staint. Also recorded from Grange by Mr. Hodgkinson.

CEDISTIS, Z.

Cedistis farinatella, Dup. Local.

Lanc.—Chat Moss (J.C.); Grange (J.H.T.); Longridge (J.B.H.).

Ches.—Bidston Hill (C.S.G., J.W.E.); Claughton and Burton (J.F.B.); Lindow and Wilmslow (J.C.).

OCNEROSTOMA, Z.

Ocnerostoma piniariella, Z. Local among firs.

Lanc.—Chat Moss (J.C.); Liverpool district (C.S.G.).

Ches.—Bidston and Claughton (J.F.B.).

Fam. *PLUTELLIDÆ.*

EIDOPHASIA, Steph.

Eidophasia Messingiella, F. Recorded only from a few localities in Lancashire: Brockholes Wood near Preston, on *Cardamine amara* (J.B.H., Ent. Mo. Mag., ii, 160; J.H.T., Ent., x, 75); near Ribchester (J.B.H., Ent., xiii, 105); Hoghton (J.H.T.); Manchester (Staint. Man., ii, 311).

PLUTELLA, Schr.

Plutella porrectella, Z. Very local, recorded from Liverpool district, in old gardens (C.S.G.), Preston (J.B.H., J.H.T.), and scarce at Rock Ferry (J.F.B.).

Plutella cruciferarum, Z. Abundant everywhere.

Plutella annulatella, Curt. Recorded from Morecambe by Messrs. Hodgkinson and Threlfall.

Plutella Dalella, Staint. Very local, all the localities being in Cheshire, viz.: Bidston Hill (J.F.B., C.S.G.); Claughton (J.F.B.) and Staleybrushes (J.C.).

CEROSTOMA, Latr.

Cerostoma vittella, L. Local.

Lanc.—Preston (J.B.H.).

Ches.—Cheadle district (H.H.C.); Dunham Park (J.C.); Puddington (J.F.B.).

Cerostoma sequella, L. Dunham Park (R. S. Edleston, Zool., xv (1857), 5719).

Cerostoma radiatella, Don. Local.

Lanc.—Croxteth Woods (C.S.G.); Grange (J.H.T.); Preston (J.B.H.).

Ches.—Dunham Park (J.C.); Wirral (J.F.B.).

Cerostoma paranthesella, L. = **costella**, F. Very local.

Lanc.—Grange (J.B.H., J.H.T.).

Ches.—Dunham Park (J.C.); Patrick Wood near Bromborough (J.F.B.).

Cerostoma sylvella, Z. Recorded from Dunham Park by Mr. Chappell.

Cerostoma lucella, F. Recorded from Manchester in Stainton's Manual (ii, 314).

Cerostoma scabrella, L. Grange (J.B.H.).

Cerostoma nemorella, L. Local.

Lanc.—Cleveleys and Wardless (J.H.T.); Preston district (J.B.H.).

Ches.—Bidston (C.S.G.).

Cerostoma xylostella, L. Common and generally distributed among honey-suckle.

Fam. *ORTHOTÆLIDÆ*.

ORTHOTÆLIA, Steph.

Orthotælia sparganella, Thunb. Very local, being recorded only from one locality in Lancashire: Pendleton (J.C.), and two in Cheshire: Bidston Marsh (J.F.B.), and pits near Birkenhead (C.S.G.).

Fam. *CHIMABACCHIDÆ.*

DASYSTOMA, Curt.

Dasystoma salicella, Hüb. Of very rare occurrence, being recorded from the Manchester district (Staint. Man., ii, 282), from Huyton, and from near Bromborough Mill (C.S.G.).

CHIMABACCHE, Z.

Chimabacche phryganella, Hüb. Nearly all the localities for this autumn species are in Cheshire.

Lanc.—Grange.

Ches.—Delamere Forest (J.B.H.); Dunham Park, Agecroft, and Knutsford (J.C.); Eastham Wood (J.F.B., C.S.G., J.W.E.).

Chimabacche fagella, F. Abundant in oak-woods in South Lancashire and Cheshire, but apparently not so common in the north.

Fam. *GELECHIDÆ.*

SEMIOSCOPIS, Hüb.

Semioscopis avellanella, Hub. Recorded only from Bidston Park Wood, by Mr. Gregson.

EPIGRAPHIA, Steph.

Epigraphia Steinkellneriana, Schiff. Very local.

Lanc.—Grange (J.H.T.).

Ches.—Alderley (J.C.); Bidston and about Upton (C.S.G.); Delamere Forest (C.S.G., Ent. vi, 453); Wirral (J.F.B.).

EXÆRETIA, Staint.

Exæretia Allisella, Staint. Local.

Lanc.—Liverpool district, among *Artemisia vulgaris* (C.S.G.); Warrington (J.B.H.).

Ches.—Stockport (J.C.); Wallasey (J.F.B.).

DEPRESSARIA, Haw.

Depressaria costosa, Haw. Common among broom and gorse all over both counties.

Depressaria flavella, Hüb. = **liturella,** Tr. Common and generally distributed.

Depressaria pallorella, Z. Local, being recorded from Delamere Forest (C.S.G., Ent. vi, 453), Rudd Heath (R. S. Edleston, Zool., ii, 735), and Stretford (J.C.).

Depressaria umbellana, Z. Local, but common where it occurs.

Lanc.—Broadgreen and Roby, on broom (C.S.G.); Lytham (J.B.H.); Rivington (J.H.T.).

Ches.—Bidston Hill, common (J.W.E.); Wirral (J.F.B.).

Depressaria nanatella, Staint. A coast species, feeding on the leaves of *Carlina vulgaris.* Occurs at Lytham (J.B.H., J.H.T. in litt. and Ent. x, 75) and New Brighton (C.S.G.).

Depressaria atomella, Hüb. Local.

Lanc.—Longridge (J.B.H.); Manchester district (Staint. Man. ii, 322); Preston, on *Genista tinctoria* (J.H.T., Ent. x, 75); Samelsbury, near Preston (J.H.T.); near Stoneyhurst (J.B.H., Ent. xii, 204).

Ches.—Bidston Marsh (C.S.G.).

Depressaria arenella, Schiff. Local.

Lanc.—Liverpool district (C.S.G.); Lytham (J.B.H.); Preston (J.H.T.); Weaste, near Manchester (J.C.).

Ches.—Wirral (J.F.B.).

Depressaria propinquella, Tr. Found only on or near the coast, especially on the sand-hills, as at Lytham (J.B.H.); at Grange (J.H.T.); Wallasey (J.F.B., C.S.G.); Bidston (J.F.B.).

Depressaria subpropinquella, Staint. Same localities as the preceding species.

? VAR. **rhodochrella,** H.S. Recorded from Blackpool (R. S. Edleston, Intell., 1859, ii, 27) and Fleetwood (J.B.H., Ent. Mo. Mag., ix, 162).

Depressaria carduella, Hüb. Recorded from one locality only in each county, viz., Grange (J.B.H., J.H.T.), and the Wallasey sand-hills, near Leasowe Castle (C.S.G.).

Depressaria Yeatiana, F. Exclusively a coast species.

Lanc.—Blackpool (J.B.H., Ent. Mo. Mag., ix, 113); Lytham (id., Ent. Mo. Mag., ii, 187; J.H.T.); Formby (J.W.E.).

Ches.—Wallasey sandhills (C.S.G.).

Depressaria ocellana, F. Generally distributed.

Lanc.—Chat Moss (J.C.); Liverpool district (C.S.G.); Lytham (J.B.H., Ent. Mo. Mag. ii, 187); Preston (J.H.T.).

Ches.—Bowdon (J.C.); Wirral (J.F.B.).

Depressaria alstrœmeriana, Clerck. Recorded from Lytham (J.B.H.); New Brighton (C.S.G.); and Wirral (J.F.B.).

Depressaria purpurea, Haw. = **vaccinella,** Hüb. Coast sand-hills, etc.

Lanc.—Blackpool (J.B.H., Ent. Mo. Mag., ix, 113); Lytham (J.B.H., J.H.T.).

Ches.—Prenton and Wallasey sand-hills (C.S.G.); Wirral (J.F.B.).

Depressaria liturella, Hüb. = **hypericella,** Tr. Scarce, recorded only from Childwall near Liverpool (C.S.G.); Grange (J.B.H., J.H.T.), and the Bollin Valley near Bowdon (J.C.).

Depressaria conterminella, Z. Local.

Lanc.—Lytham (J.B.H., in litt. and Ent. Mo. Mag., ii, 187); Pilling Moss (id., Ent. Mo. Mag., ii, 186); Preston (J.H.T.); Stretford and Withington (J.C.).

Ches.—Bidston (J.F.B.); Wallasey (J.F.B., C.S.G.).

Depressaria applana, F. Common everywhere among Umbelliferæ.

Depressaria ciliella, Staint. Local, but common where it occurs.

Lanc.—Lytham (J.B.H.); Preston, common (J.H.T.); Stretford and Withington (J.C.).

Ches.—Bidston (J.F.B., C.S.G.); Prenton (C.S.G.); Upton (J.F.B.).

Depressaria capreolella, Z. Recorded only from Grange (J.B.H., J.H.T.) and Delamere Forest (C.S.G., Ent., vi, 452).

Depressaria rotundella, Doug. Leasowe sand-hills (Cheshire), among sea-holly (C.S.G.).

Depressaria angelicella, Hüb. Local.

Lanc.—Lytham (J.B.H.); Pilling Moss (id., Ent. Mo. Mag., ii, 186); Preston and Salwick (J.H.T.); Manchester district (Staint. Man., ii, 324).

Ches.—Bidston Marsh (C.S.G.).

Depressaria pimpinellæ, Z. Not common.

Lanc.—Grange (J.B.H., J.H.T.); Pilling Moss (J.B.H., Ent. Mo. Mag., ii, 186).

Ches.—One specimen taken near New Brighton (C.S.G.).

Depressaria badiella, Hüb. Local.

Lanc.—Liverpool district (C.S.G.); Lytham (J.B.H.); Pilling Moss (id., Ent. Mo. Mag, ii, 186).

Ches.—One specimen taken on the Wallasey sand-hills (J.F.B.).

Depressaria heracleana, DeG. Local.

Lanc.—Chat Moss, Withington, and Glazebrook (J.C.) Lytham (J.B.H.); Penwortham (J.H.T.).

Ches.—Bidston and Tranmere (J.F.B.); about Wallasey Mill (C.S.G.).

Depressaria discipunctella, H.S. Grange (J.B.H.).

Depressaria albipunctella, Hüb. Scarce, recorded only from the coast: Cleveleys (J.H.T.), Hightown and Wallasey (C.S.G.).

Depressaria Weirella, Staint. Recorded from the Liverpool district, among *Anthriscus sylvestris* (C.S.G.); Lytham (J.B.H.); Penwortham (J.H.T.); and Pilling Moss (J.B.H., Ent. Mo. Mag., ii, 186).

Depressaria pulcherimella, Staint. Local.

Lanc.—Grange (J.B.H., J.H.T.); Pilling Moss (J.B.H., Ent. Mo. Mag., ii, 186); Preston (J.H.T.).

Ches.—Bidston and Leasowe (J.F.B.); Claughton and Upton (C.S.G.).

Depressaria Douglasella, Staint. Confined to the Lancashire coast.

Lanc.—Blackpool (J.B.H., Ent. Mo. Mag., ix, 113); Crosby sand-hills, four specimens (C.S.G.); Fleetwood (J.B.H.); Wardless (J.H.T.).

Depressaria chærophylli, Z. Recorded from Prenton and Woolton, both near Liverpool, by C. S. Gregson.

Depressaria nervosa, Haw. Local.

Lanc.—Lytham (J.B.H.); Penwortham (J.H.T.).

Ches.—Wirral (J.F.B.).

GELECHIA, Staint.

Gelechia rhombella, Schiff. Recorded only from Lancashire: Cheetham Hill (R. S. Edleston, Zool., 1845, 1220); Grange (J.B.H., J.H.T.); Irlam (J.C.).

Gelechia distinctella, Z. Recorded from Lytham (J.B.H., Ent. Mo. Mag., ii, 187; J.H.T.) and Wallasey sand-hills (J.F.B., C.S.G.).

Gelechia celerella, Staint. Recorded only from the Cheshire sand-hills (Staint. Man., ii, 337), Leasowe (C.S.G.).

Gelechia sororculella, Hüb. Local.

Lanc.—Lytham (J.B.H., Ent. Mo. Mag., ii, 187); Manchester (Staint. Man., ii, 332); Preston (J.H.T.).

Ches.—Wallasey sand-hills (J.F.B., C.S.G.).

Gelechia velocella, Dup. Recorded only from the Wallasey sand-hills by Mr. Brockholes, and from Manchester (Staint. Man., ii, 331).

Gelechia peliella, Tr. Manchester (Staint. Man., ii, 332).

Gelechia fumatella, Doug. On the sand-hills midway between Wallasey and Leasowe (C.S.G.).

Gelechia ericetella, Hüb. Abundant wherever heather grows.

Gelechia lentiginosella, Z. Scarce and local.

Lanc.—Near Stoneyhurst (J.B.H., Ent., xii, 204); Samelsbury, near Preston (J.H.T.).

Ches.—Bidston Marsh, on *Genista* (C.S.G.).

Gelechia mulinella, Z. Locally common.

Lanc.—Cleveleys (J.H.T.); Liverpool district, among gorse (C.S.G.); Manchester (Staint. Man., ii, 331).

Ches.—Knutsford (J.C.); Wallasey and Tranmere (J.F.B.).

Gelechia malvella, Hüb. Manchester, common (Staint. Man., ii, 330).

Gelechia longicornis, Curt. Common on the Lancashire and Cheshire moors and mosses.

Gelechia diffinis, Haw. Common on moors and mosses.

BRACHMIA, Hein.

Brachmia Mouffetellæ, Schiff. Very local, being recorded only from Cleveleys on the Lancashire coast (J.H.T.), Withington and Glazebrook (J.C.), and Tranmere (J.F.B.).

BRYOTROPHA, Hein.

Bryotropha terrella, Hüb. Abundant everywhere.

Bryotropha politella, Staint. Recorded only from the Wallasey sand-hills (J.F.B.).

Bryotropha desertella, Doug. A common species on the coast sand-hills of both counties.

Bryotropha senectella, Z. Coast sand-hills, etc.

Lanc.—Grange (J.H.T.); Lytham (J.B.H., in litt. and Ent. Mo. Mag. ii, 187).

Ches.—Wallasey sand-hills (J.F.B., C.S.G.).

Bryotropha mundella, Doug. Recorded from Lytham (J.B.H., J.H.T.) and Wallasey sand-hills (J.F.B., C.S.G.).

Bryotropha affinis, Doug. Local.

Lanc.—Lytham (J.B.H.); Preston (J.H.T.).

Ches.—Wallasey sand-hills (J.F.B., C.S.G.).

Bryotropha umbrosella, Z. Recorded only from Lytham (J.H.T., J.B.H., in litt. and Ent. Mo. Mag. iii, 37).

Bryotropha domestica, Haw. Local.

Lanc.—Churchtown near Southport (J.B.H.); Liverpool (C.S.G.).

Ches.—Bowdon (J.C.); Wirral (J.F.B.).

LITA, Tr.

Lita artemisiella, Tr. Abundant on the coast sand-hills.

Lita atriplicella, F. Fleetwood (J.B.H.).

Lita ocellatella, Staint. Fleetwood (J.B.H.).

Lita instabilella, Doug. Fleetwood (J.B.H.); Humphrey Head near Grange (J.B.H., Ent. Mo. Mag. vii, 87); Wardless (J.H.T.).

Lita acuminatella, Sircom. Lytham (J.B.H.).

Lita æthiops, Westw. Local on heaths and mosses.

Lanc.—Chat Moss (J.C.); Lancashire mosses in places where they have been burnt (C.S.G.); Longridge (J.H.T.).

Ches.—Prenton (J.F.B.).

Lita Hubneri, Haw. Recorded only from the Manchester district (Staint. Man. ii, 339); Irlam and Glazebrook (J.C.).

Lita maculea, Haw. Local.

Lanc.—Lytham (J.B.H.); Pilling Moss (id, Ent. Mo. Mag. ii, 186); Preston (J.H.T.).

Ches.—Flixton and Carrington Mosses (J.C.); Wirral (C.S.G.); Claughton? (J.F.B.).

Lita fraternella, Doug. Local.

Lanc.—Fylde district (J.H.T.); Pilling Moss (J.B.H., Ent. Mo. Mag., ii, 186); Preston (J.B.H., J.H.T.); Withington (J.C.).

Ches.—Prenton, etc. (C.S.G.).

Lita viscariella, Staint. Recorded only from the Lancashire coast at Cleveleys (J.H.T.) and Fleetwood (J.B.H.).

Lita tricolorella, Haw. Local and not common.

Lanc.—Manchester (Staint. Man. ii, 338); Preston (J.B.H., J.H.T.).

Ches.—Dunham Park, rare (R. S. Edleston, Zool., 1845, 1220); Eastham (J.F.B.); Wirral (C.S.G.).

Lita costella, Westw. A single specimen beaten from *Solanum dulcamara* at Olive Mount near Liverpool (C.S.G.).

Lita maculiferella, Doug. Local.

Lanc.—Lytham (J.B.H., Ent. Mo. Mag., ii, 187; J.H.T., Ent. Mo. Mag., xix, 112); Preston (J.B.H.).

Ches.—Wallasey sand-hills (J.F.B.).

Lita junctella, Doug. Manchester (Staint. Man., ii, 339).

Lita marmorea, Haw. Recorded only from the Lytham (J.B.H., J.H.T.) and Wallasey sand-hills (C.S.G., J.F.B.).

Lita semidecandrella, Threll. Lytham (J.B.H., J.H.T.).

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TELEIA, Hein.

Teleia vulgella, Hüb. Locally common.

Lanc.—Irlam (J.C.); Preston (J.B.H.).

Ches.—Wirral, common (J.F.B., C.S.G.).

Teleia sequax, Haw. Grange (J.B.H., J.H.T.).

Teleia fugitivella, Z. Recorded from Croxteth, near Liverpool (C.S.G.).

Teleia humeralis, Z. = **Lyella,** Curt. Grange (J.B.H.).

Teleia proximella, Hüb. Local.

Lanc.—Chat Moss (J.C.); around the mosses on trunks of alders (C.S.G.); Preston (J.H.T.).

Ches.—Bidston, scarce (J.F.B.); Cheadle district, common (H.H.C.).

Teleia notatella, Hüb. Local.

Lanc.—Manchester (Staint. Man., ii, 335); Preston (J.H.T.); Windermere (J.B.H.).

Ches.—Wirral, occasionally (J.F.B.).

Teleia triparella, Z. Local, found at Grange (J.H.T.); around the Lancashire mosses (C.S.G.); and recorded for the Manchester district (Staint. Man., ii, 342).

Teleia luculella, Hüb. Local, and not very common.

Lanc.—Levenshulme (H.H.C.); Preston (J.H.T.); Withington (J.C.).

Ches.—Bramall (H.H.C.); Dunham Park (J.C.).

Teleia dodecella, L. Local, among firs.

Lanc.—Chat Moss (J.C.); Grange (J.H.T.); Liverpool district (C.S.G.).

Ches.—Bidston and Claughton (J.F.B.); Lindow Common (J.C.).

POECILIA, Hein.

Poecilia nivea, Haw. = **gemmella,** Z. Taken only at Grange (J.H.T.) and Bidston and Rock Ferry (J.F.B.).

ARGYRITIS, Hein.

Argyritis pictella, Z. Taken by Mr. Gregson at the mouth of the Alt, at Hightown.

NANNODIA, Hein.

Nannodia stipella, Haw. = **næviferella,** Dup. Staint. Recorded from Grange (J.H.T.); Church Road, Stanley near Liverpool, and Prenton near Birkenhead (C.S.C.); and Manchester, common (Staint. Man., ii, 345).

Nannodia Hermanella, F. Recorded from Lytham by J. B. Hodgkinson and J. H. Threlfall, and from Wallasey, Tranmere, and Oxton by J. F. Brockholes.

SITOTROGA, Hein.

Sitotroga cerealella, Ol. Abundant in grain warehouses in Liverpool (C.S.G., J.B.H.).

PTOCHEUUSA, Hein.

Ptocheuusa littorella, Doug. Wallasey sand-hills (J.F.B.).

Ptocheuusa inopella, Z. = **paupella,** Z. Cleveleys (J.H.T.).

Ptocheuusa ossiella, Staint. Grange (J.B.H., J.H.T.).

PARASIA, Dup.

Parasia lappella, L. Local, recorded by J. F. Brockholes as abundant between Flaybrick Hill and Claughton, and by C. S. Gregson as occurring near Hose Farm, Liscard, and on the clay banks at Egremont.

Parasia metzneriella, Staint. Recorded from Grange and Longridge (J.B.H., J.H.T.).

CHELARIA, Haw.

Chelaria Hubnerella, Don. Local.

Lanc.—Chat Moss (J.C.); Silverdale (J.H.T.); Windermere (J.B.H.).

Ches.—Bidston (J.F.B.); Tranmere (C.S.G.).

ERGATIS, Hein.

Ergatis ericinella, Dup. Local.

Lanc.—Chat Moss (J.C.); Grange and Farrington (J.H.T.); Liverpool district, on heaths and mosses (C.S.G.).

Ches.—Oxton Heath near Birkenhead (J.F.B.).

DORYPHORA, Hein.

Doryphora lucidella, Steph. Recorded by C. S. Gregson from Liscard (Cheshire) and from pits near Tue Brook (Liverpool).

MONOCHROA, Hein.

Monochroa tenebrella, Hüb. Local.

Lanc.—Farrington (J.H.T.); Liverpool, on the lawn opposite the hot-houses in the botanic gardens (C.S.G.); Lytham (J.B.H.).

Ches.—Cheadle Hulme, common (H.H.C.); Oxton (J.F.B.).

LAMPROTES, Hein.

Lamprotes atrella, Haw. Taken only at Grange (J.H.T.) and Lytham (J.B.H.).

ANACAMPSIS, Curt.

Anacampsis sircomella, Staint. Recorded from Preston (J.H.T.) and from Crewe (Staint. Man., ii, 343).

Anacampsis immaculatella, Doug. Taken at Wardless by Threlfall.

Anacampsis anthyllidella, Hüb. Common on the Cheshire sand-hills (J.F.B., C.S.G., J.W.E.) and at Lytham (J.B.H.).

Anacampsis ligulella, Z. Local.

Lanc.—Lytham (J.B.H., Ent. Mo. Mag., ii, 187); Preston (J.H.T.).

Ches.—New Brighton (C.S.G.).

Anacampsis tæniolella, Z. Local.

Lanc.—Grange (J.H.T.); Lytham (J.B.H.); Manchester (Staint Man., ii, 343).

Ches.—Wallasey sand-hills (J.F.B.).

TACHYPTILIA, Hein.

Tachyptilia populella, Clerck. Common and generally distributed.

Tachyptilia temerella, Z. A coast sand-hill species, occurring at Lytham (J.B.H., Ent. Mo. Mag., ii, 187; J.H.T.), Crosby (C.S.G.) and Wallasey (J.F.B.).

BRACHYCROSSATA, Hein.

Brachycrossata cinerella, Clerck. Local.

Lanc.—Grange (J.H.T.); Lytham (J.B.H., in litt. and Ent. Mo. Mag., ii, 187); Stretford (J.C.).

Ches.—On the roadside between Poulton and Wallasey (C.S.G.); Wallasey sand-hills (J.F.B.).

CERATOPHORA, Hein.

Ceratophora rufescens, Haw. Local, occurring on the Lancashire and Cheshire coast near Liverpool (C.S.G., J.F.B.), and at Stretford near Manchester (J.C.).

CLEODORA, Curt.

Cleodora cytisella, Curt. Manchester (Staint. Man., ii, 349).

YPSOLOPHUS, F.

Ypsolophus marginellus, F. = **striatellus,** Hüb. Recorded from Grange by Hodgkinson.

SOPHRONIA, Hüb.

Sophronia semicostella, Hüb. = **parenthesella,** L. Recorded from the Manchester district (Staint. Man., ii, 351), from Dunham Park (J.C.), and from Jackson's Wood, Claughton (C.S.G.).

ANARSIA, Z.

Anarsia spartiella, Schrk. Local.

Lanc.—Preston (J.H.T.).

Ches.—Bidston and Wallasey (J.F.B.); gorse bushes between New Brighton and Wallasey (C.S.G.).

? VAR. **genistæ,** Staint. Morecambe (J.H.T.).

PLEUROTA, Hüb.

Pleurota bicostella, Clerck. Common on heaths and mosses.

CARCINA, Hüb.

Carcina quercana, F. Common and generally distributed among oaks.

HARPELLA, Schrk.

Harpella Geoffrella, L. Very local and scarce.

Lanc.—A few specimens in a lane near the old mill-dam at Garston (C.S.G.); Manchester (Staint. Man., ii, 353).

Ches.—Puddington (J.F.B.).

DASYCERA, Haw.

Dasycera sulphurella, F. Abundant everywhere. I had the pleasure of breeding (about 1880) two specimens in which the yellow markings were replaced by bronze—a variety quite unknown to Mr. Gregson.

ŒCOPHORA, Z.

Œcophora tinctella, Hüb. Cheetham Hill (R. S. Edleston, Zool. ii, 735).

Œcophora flavifrontella, Hüb. Very local.

Lanc.—Grange (J.B.H. in litt and Ent. Mo. Mag., x, 40; J.H.T.); Windermere (J.B.H.).

Ches.—Bidston, scarce (J.F.B.).

Œcophora subaquilea, Staint. Very local, being recorded only from Staleybrushes (J.B.H.) and Bidston (J.F.B., C.S.G.).

Œcophora pseudospretella, Staint. Abundant everywhere.

Œcophora fuscescens, Haw. Local.

Lanc.—Grange and Wardless (J.H.T.); Manchester, common (J.C.); Windermere (J.B.H.).

Ches.—Bidston Hill, in old gorse bushes (C.S.G.); Puddington (J.F.B.).

Œcophora stipella, L. = **similella,** Staint. Recorded only from the Manchester district (J.B.H., and Staint. Man. ii, 356) and Disley (J.C.).

Œcophora minutella, L. Local.

Lanc. — Manchester (J.B.H., and Staint. Man., ii, 356); Preston (J.B.H.).

Ches.—Puddington (J.F.B.).

Œcophora tripuncta, Haw. Local.

Lanc.—Manchester (J.B.H., and Staint. Man., ii, 356); Preston (J.B.H.).

Ches.—Oxton, near Birkenhead (C.S.G.).

Œcophora woodiella, Curt. About fifty or sixty specimens of this species were taken by Robert Cribb, about 1840, in a rotten tree on Kersall Moor, near Manchester; all but three of these specimens (one in the Curtis collection in Australia, and two in the Carter collection at Owens College) were accidentally destroyed, and the insect has never been taken since either there or elsewhere.

Fam. *GLYPHIPTERYGIDÆ.*

GLYPHIPTERYX, Hüb.

Glyphipteryx fuscoviridella, Haw. Locally abundant.

Lanc.—Chat Moss (J.C.); Crosby sand-hills (J.W.E.); Preston (J.B.H., J.H.T.).

Ches.—Lindow Common (J.C.); Prenton and Tranmere (J.F.B.); Wallasey sand-hills (C.S.G.).

Glyphipteryx thrasonella, Scop. Local but common.

Lanc.—Preston (J.B.H., J.H.T.); Liverpool district, among rushes (C.S.G.).

Ches.—Bidston Marsh and Prenton (J.F.B.); Knutsford (J.C.).

Glyphipteryx Haworthana, Steph. Locally common.

Lanc.—Bury (J.H.T.); Chat Moss (J.C.); Lancashire mosses—feeding on seeds of cotton grass (C.S.G.).

Ches.—Lindow Common (H.H.C.).

Glyphipteryx equitella, Scop. Very local.

Lanc.—Grange (J.H.T.); Humphrey Head (J.B.H., Ent. Mo. Mag., vii, 87).

Ches.—Old walls where *Sedum acre* grows, near Wallasey church (C.S.G.).

Glyphipteryx Fischeriella, Z. Locally abundant.

Lanc.—Irlam (J.C.); Longridge (J.B.H.); Preston (J.H.T.).

Ches.—Alderley, rare (H.H.C.); Bidston and Tranmere (J.F.B.); Bromborough, near the Station (J.W.E.).

Fam. *GRACILARIDÆ.*

GRACILARIA, Z.

Gracilaria alchemiella, Scop. = **Swederella,** Thunb. Common, and generally distributed.

Gracilaria stigmatella, F. Local.

Lanc.—Chat Moss (J.B.H.); Cheetham Hill (R. S. Edleston, Zool., 1845, 1220); Preston and Grange (J.H.T.).

Ches.—Cheshire sand-hills (C.S.G., J.F.B.).

Gracilaria hemidactylella, F. Recorded only from Dunham Park by Mr. Chappell.

Gracilaria semifascia, Haw. Grange (J.B.H.).

Gracilaria populetorum, Z. Grange (J.B.H., J.H.T.).

Gracilaria elongella, Z. Very local.

Lanc.—Croxteth Park, among silver firs (C.S.G.); Grange (J.H.T., J.B.H. in litt., and Ent. Mo. Mag., xii, 163).

Ches.—Delamere Forest (C.S.G., Ent., vi, 453); Dunham Park (J.C.).

Gracilaria tringipennella, Z. Local.

Lanc.—Fleetwood (J.H.T.); Grange (J.B.H.); Withington (J.C.).

Ches.—Puddington and near Birkenhead (J.F.B.); Wallasey (J.W.E.).

Gracilaria syringella, F. Abundant everywhere among lilacs.

Gracilaria phasianipennella, Hüb. Local.

Lanc.—Grange (J.B.H. in litt., and Ent. Mo. Mag., xii, 163).

Ches.—Claughton, a single specimen (C.S.G.); Delamere Forest (C.S.G., Ent., vi, 453).

Gracilaria auroguttella, Steph. Local, all the localities being in Lancashire:—Lane leading from Broad Green Toll-bar to Woolton, near Liverpool (C.S.G.); Chorlton-cum-Hardy (J.C.); Grange (J.B.H., Ent. Mo. Mag., xiii, 16); Pilling Moss (id., Ent. Mo. Mag., ii, 186); Scorton, near Preston (J.H.T.).

CORISCIUM, Z.

Coriscium cuculipennellum, Hüb. Grange (J.B.H., J.H.T.) and Windermere (J.B.H.) are the only recorded localities.

Coriscium sulphurellum, Haw. Boor's Wood, Hale (C.S.G.).

ORNIX, Z.

Ornix guttea, Haw. Local.

Lanc.—Grange and Preston (J.H.T.); Windermere (J.B.H.).

Ches.—Bidston and Moreton (C.S.G.); Upton and Tranmere (J.F.B.).

Ornix loganella, Staint. Local, taken in Lancashire only, at Grange (J.H.T.); Simmonswood Moss, beaten from mountain ash (C.S.G.); Windermere (J.B.H.).

Ornix avellanella, Staint. Local.

Lanc.—Croxteth Woods (C.S.G.); Preston (J.H.T.); Windermere (J.B.H.).

Ches.—Hale Barn and Bucklow Hill (J.C.); Prenton Lane (C.S.G.).

Ornix torquilella, Z. Local.

Lanc.—Cleveleys and Grange (J.H.T.); Windermere (J.B.H.).

Ches.—Tranmere (J.F.B.).

Ornix scoticella, Staint. Very local.

Lanc.—Grange (J.H.T.) and Windermere (J.B.H.).

Ches.—One specimen, Bidston (J.F.B.).

Ornix betulæ, Staint. Very local, being recorded only from Simmonswood Moss (C.S.G.), and Windermere (J.B.H.).

Ornix scutulatella, Staint. Windermere (J.B.H.).

Fam. *COLEOPHORIDÆ.*

COLEOPHORA, Z.

Coleophora juncicolella, Staint. Local.

Lanc.—Farrington and Longridge (J.H.T.); Grange (J.B.H.).

Ches.—Bidston Hill (C.S.G., J.F.B.); Bowdon (R. S. Edleston, Zool., 1857, 5406); Knutsford (J.C.); Puddington (J.F.B.).

Coleophora limosipennella, Dup. Grange (J.B.H.).

Coleophora laricella, Hüb. Local, among larches.

Lanc.—Grange (J.B.H., J.H.T.); Liverpool district (C.S.G.); Manchester district (Staint. Man., ii, 384); Windermere (J.H.T.).

Ches.—Bidston Hill (J.F.B.) and Dunham Park (J.C.).

Coleophora adjunctella, Hodgk. Preston (J.B.H.).

Coleophora Wilkinsoni, Scott. Grange (J.B.H., J.H.T.).

Coleophora lutipennella, Z. Local.

Lanc.—Chat Moss (J.C.); Preston (J.B.H., J.H.T.).

Ches.—Dunham Park (J.C.); Eastham Wood (C.S.G.); Tranmere (J.F.B.).

Coleophora fuscedinella, Z. Local.

Lanc.—Chat Moss (J.C.); Liverpool district, common among alders (C.S.G.); Preston (J.B.H.).

Ches.—Puddington (J.F.B.).

Coleophora viminetella, Z. Local on heaths and mosses.

Lanc.—Chat Moss; Farrington and Longridge (J.H.T.); Preston (J.B.H.); Simmonswood Moss (C.S.G.).

Ches.—Wallasey and near Birkenhead (J.F.B.).

Coleophora bicolorella, Scott. Grange (J.B.H.).

Coleophora vitisella, Gregs. Staleybrushes (J.C., J.B.H.).

Coleophora orbitella, Z. Recorded only from Carrington Moss (R. S. Edleston, Ent. ii, 150).

Coleophora siccifolia, Staint. Preston (J.B.H., J.H.T.).

Coleophora gryphipennella, Bouché. Local.

Lanc.—Cleveleys (J.H.T.); Withington and Irlam (J.C.); Liverpool district, common among roses (C.S.G.).

Ches.—Northenden (J.C.) and Wirral (J.F.B.).

Coleophora nigricella, Steph. Abundant everywhere on hawthorn.

Coleophora paripennella, Z. Grange (J.B.H., J.H.T.).

Coleophora fusco-cuprella, H.S. Grange (J.B.H., Ent. Mo. Mag., xii, 163; and J.H.T., Ent. x, 100).

Coleophora alcyonipennella, Kollar. Common and generally distributed.

Coleophora deauratella, Z. Windermere (J.B.H., J.H.T.).

Coleophora fabriciella, Vill. Local.

Lanc.—Grange (J.B.H., J.H.T.); Preston (J.H.T.).

Ches.—Bidston (C.S.G.); near Claughton (J.F.B.).

Coleophora anatipennella, Hüb. Local.

Lanc.—Farrington (J.H.T.); Preston (J.B.H., J.H.T.); Withington and Irlam (J.C.).

Ches.—Bidston (J.F.B.); Wallasey sand-hills (C.S.G.).

Coleophora albicosta, Haw. Local.

Lanc.—Cleveleys (J.H.T.); Preston (id.; J.B.H.); Manchester (Staint. Man., ii, 388).

Ches.—Bidston and New Brighton (C.S.G.); Wirral (J.F.B.).

Coleophora pyrrhulipennella, Z. Common on heaths and mosses.

Coleophora fuscociliella, Z. Grange (J.B.H., Ent. Mo. Mag. x, 40).

Coleophora ochrea, Haw. Recorded from Upton and Moreton (Cheshire) by Gregson.

Coleophora discordella, Z. Local.

Lanc.—Crosby sand-hills among *Lotus corniculatus* (C.S.G.); Lytham (J.H.T.); Pilling Moss (J.B.H., Ent. Mo. Mag., ii, 186); Preston (J.B.H., J.H.T.); Manchester (Staint. Man., ii, 390).

Ches.—Wallasey sand-hills and New Ferry (J.F.B.).

Coleophora niveicostella, Z. Manchester (Staint. Man., ii, 390)

Coleophora therinella, Tgstr. Recorded only from Preston (J.B.H.) and a single specimen from the Wallasey sand-hills (J.F.B.).

Coleophora tripoliella, Hodgk. On *Aster tripolium* at Fleetwood (J.B.H., Ent. viii, 55).

Coleophora virgaureæ, Staint. = **albicans,** Frey. Very local.

Lanc.—Grange (J.B.H., J.H.T.); Warrington (N. Greening, Ent. Mo. Mag., iv, 137).

Ches.—Wallasey sand-hills, common on mugwort (J.W.E.).

Coleophora laripennella, Zett. = **annulatella,** Tgstr. Recorded from Fleetwood and Preston in Lancashire (J.B.H.) and Bidston and Wallasey in Cheshire (J.F.B.).

Coleophora salinella, Staint. Fleetwood (J.B.H.); Humphrey Head (id., Ent. Mo. Mag., vii, 87).

Coleophora murinipennella, Dup. Recorded from Preston (J.B.H., J.H.T.) and Pilling Moss (J.B.H., Ent. Mo. Mag. ii, 186).

Coleophora cæspititiella, Z. Locally abundant.

Lanc.—Chat Moss (J.C.); Preston (J.B.H., J.H.T.).

Ches.—Bidston Hill (J.F.B., C.S.G., J.W.E.); Knutsford and Staleybrushes (J.C.).

Fam. *LAVERNIDÆ.*

CHAULIODES, Tr.

Chauliodes chærophyllellus, Goeze. Not common, being recorded only from Cleveleys (J.H.T.), Grange (J.B.H.), and near West Kirby (J.F.B.).

LAVERNA, Curt.

Laverna propinquella, Staint. = **paludicolella,** Doub. Local.

Lanc.—Pilling Moss (J.B.H., Ent. Mo. Mag., ii, 186); Preston (J.B.H., J.H.T.).

Ches.—Prenton near Birkenhead (C.S.G.).

Laverna lacteella, Steph. Dutton near Ribchester (J.B.H., Ent., xiii, 105); Windermere (J.B.H.); and Tranmere (C.S.G.).

Laverna miscella, Schiff. Grange (J.B.H., J.H.T.).

Laverna rhamniella, Z. Grange (J.B.H., J.H.T.) and Silverdale (J.H.T.).

Laverna ochraceella, Curt. Very local.

Lanc.—Preston (J.B.H.).

Ches.—Bidston Marsh, among *Epilobium* (C.S.G.); Puddington (J.F.B.).

Laverna Schranckella, Hüb. Local, but only in Lancashire. Brockholes near Preston (J.B.H., Ent. Mo. Mag., ii, 160); Pilling Moss (J.B.H., Ent. Mo. Mag., ii, 186); Liverpool district (C.S.G.); Salwick, near Preston (J.H.T.); Windermere (J.B.H.).

Laverna decorella, Steph. Grange (J.H.T.).

Laverna Hellerella, Dup. Cleveleys and Preston (J.H.T.).

Laverna atra, Haw. Local.

Lanc.—Chat Moss (R. S. Edleston, Zool., 1845, 1220); Preston (J.B.H.); Liverpool district (C.S.G.).

Ches.—Knutsford (J.C.); Tranmere (J.F.B.).

Laverna vinolentella, H.S. Preston (J.B.H.).

PANCALIA, Curt.

Pancalia Leuwenhoekella, L. Recorded from North Lancashire only. Grange (J.H.T., J.B.H. in litt., and Ent. Mo. Mag., x, 40); Lytham (J.B.H., Ent. Mo. Mag., ii, 187); Silverdale (J.H.T.).

ENDROSIS, Hüb.

Endrosis lacteella, Schiff. = **fenestrella,** Staint. Abundant everywhere.

SCHRECKENSTEINIA, Hüb.

Schreckensteinia festaliella, Hüb. Locally common.

Lanc.—Chat Moss (J.C.); Dutton, Grange, and Windermere (J.B.H.); Preston district (J.H.T.).

Ches.—Bidston, Prenton, and Eastham (J.F.B.).

BATRACHEDRA, Staint.

Batrachedra præangusta, Haw. Local.

Lanc.—Chat Moss (J.C.); sand-hills between Crosby and Hightown (C.S.G.); Grange (J.B.H.).

Ches.—Bidston and Ledsham (J.F.B.); Marple (J.C.).

ANTISPILA, Hüb.

Antispila Pfeifferella, Hüb. Recorded only from Pendlebury (R. S. Edleston, Zool., 1845, 1220).

HELIOZELA, H.S.

(TINAGMA, Dup.).

Heliozela sericiella, Haw. Local.

Lanc.—Grange (J.B.H., J.H.T.); Liverpool district (C.S.G.); Prestwich (J.C.).

Ches.—Tranmere (J.F.B.).

Heliozela stannella, F. Recorded only for the Manchester district (Staint. Man., ii, 367).

Heliozela resplendella, Staint. Recorded only for Manchester (Staint. Man., ii, 367) and Preston (J.B.H., J.H.T.).

CHRYSOCLISTA, Staint.

Chrysoclista bimaculella, Haw. Windermere (J.B.H.).

Chrysoclista terminella, Westw. Grange (J.B.H.).

Chrysoclista aurifrontella, Hüb. = **flavicaput,** Haw. Common and generally distributed.

PERITTIA, Staint.

Perittia obscurepunctella, Staint. Scarce.

Lanc.—Edge Lane, Liverpool (C.S.G.); Grange (J.B.H., J.H.T.).

Ches.—Patrick Wood and Puddington (J.F.B.).

HEYDENIA, Hofm.

Heydenia profugella, Staint. Near Grange (J.B.H.).

Heydenia fulviguttella, Z. = **flavimaculella,** Stt. Local.

Lanc.—Barton, near Manchester (J.C.); Preston (J.B.H., J.H.T.); Wardless (J.H.T.); Liverpool district, among *Angelica sylvestris* (C.S.G.).

Ches.—Castle Mill and Mobberley (J.C.).

Fam. *ELACHISTIDÆ.*

BUTALIS, Tr.

Butalis grandipennis, Haw. Common and generally distributed on heaths.

Butalis fusco-ænea, Haw. Grange (J.B.H., J.H.T.).

Butalis senescens, Staint. Recorded from Bidston Hill (C.S.G.) and Grange (J.B.H.).

Butalis laminella H.S. Recorded only from Grange (J.B.H.).

Butalis fuscocuprea, Haw. Grange (J.B.H., J.H.T.).

AMPHISBATIS, Z.

Amphisbatis incongruella, Staint. Recorded only from Staley-brushes (J.B.H.); Delamere Forest (C.S.G., Ent., vi, 453); and Carrington Moss (R. S. Edleston, Zool., 1857, 5406), all in Cheshire.

STEPHENSIA, Staint.

Stephensia Brunnichiella, L. Near Grange (J.B.H.).

ELACHISTA, Staint.

Elachista trapeziella, Staint. Caton, near Lancaster (J.H.T.).

Elachista Gleichenella, F. Grange (J.B.H., in litt. and Ent. Mo. Mag., vii, 87); Prestwich (J.C.).

Elachista densicornella, Hodg. Grange (J.B.H.).

Elachista apicipunctella, Staint. From Lancashire localities only; Chat Moss (J.C.); Dutton near Ribchester (J.B.H., Ent., xiii, 105); Grange (J.B.H.); Preston (J.H.T.); Simmonswood Moss (C.S.G.).

Elachista albifrontella, Hüb. Common and generally distributed.

Elachista cinereopunctella, Haw. Recorded from Grange (J.H.T.) and Knutsford (J.C.).

Elachista luticomella, Z. Local.

Lanc.—Preston (J.H.T.); Prestwich (J.C.).

Ches.—Knutsford (J.C.); Rock Ferry and Bromborough (J.F.B.).

Elachista atricomella, Staint. Local.

Lanc.—Grange (J.B.H.); Preston (J.H.T.).

Ches.—Knutsford (J.C.).

Elachista Kilmunella, Staint. Locally abundant.

Lanc.—Dutton, near Ribchester (J.B.H., Ent., xiii, 105); Grange district (J.H.T.); Kirkby Moss (C.S.G.).

Ches.—Castle Mill (J.C.); Prenton (C.S.G.); Pelly Pool, Delamere (J.W.E.).

Elachista perplexella, Staint. Recorded from Brockholes near Preston (J.B.H., Ent. Mo. Mag., ii, 160), and Grange (J.H.T.).

Elachista subnigrella, Doug. Grange (J.H.T., J.B.H. in litt. and Ent. Mo. Mag., xiii, 16).

Elachista nigrella, Haw. Recorded from Liverpool district (C.S.G.); Preston (J.H.T.); Grange (J.B.H.), and Rock Ferry (J.F.B.). It used to be common in Ullet Road, Liverpool.

Elachista Gregsoni, Staint. First described (Ent. Ann., 1855, 70) by Stainton from specimens taken by Gregson on the cinder-path leading from Edge Lane to Church Road, Stanley.

Elachista Bedellella, Sircom. Recorded only from North Lancashire. Grange (Humphrey Head), by Hodgkinson (in litt. and Ent. Mo. Mag., vii, 87).

Elachista humilis, Zett. Recorded by J. B. Hodgkinson from Wildbottoms, near Preston (Ent. Mo. Mag., ii, 160), and by Brockholes from Rock Ferry.

Elachista obscurella, Staint. = **subobscurella,** Doub. Local.

Lanc.—Preston, common (J.H.T.).

Ches.—Dunham Park (J.C.); Cheshire sand-hills (C.S.G.); Wirral (J.F.B.).

Elachista megerlella, Staint. Local.

Lanc.—Grange (J.B.H.); Preston (J.H.T.); Manchester (Staint. Man., ii, 409).

Ches.—Between Seacombe and Liscard (C.S.G.); Rock Ferry (J.F.B.).

Elachista adscitella, Staint. Grange (J.B.H., J.H.T.).

Elachista tæniatella, Staint. Grange (J.B.H., J.H.T., Ent., xii, 87 and in litt.).

Elachista gangabella, Z. Grange (J.B.H.).

Elachista zonariella, Tgstr. Preston (J.H.T.).

Elachista cerusella, Hüb. Local, being recorded from Grange (J.B.H.); Preston, common (J.H.T.); and the Lancashire mosses, on wet parts (C.S.G.).

Elachista rhynchosporella, Staint. On the mosses, where it feeds in cotton grass.

Elachista biatomella, Staint. Local.

Lanc.—Grange (J.B.H., J.H.T.) and Silverdale (J.H.T.).

Ches.—Bidston Hill and New Brighton (C.S.G.).

Elachista pollinariella, Z. Grange (J.H.T.).

Elachista serricornis, Logan. Pilling Moss (J.B.H.).

Elachista rufocinerea, Haw. Abundant everywhere.

Elachista triatomea, Haw. Recorded from Morecambe (J.H.T.) and Bidston Hill and New Brighton (C.S.G.).

Elachista dispunctella, Dup. Grange (J.H.T., J.B.H.).

Elachista argentella, Clerck. = **cygnipennella,** Hüb. Abundant everywhere.

Elachista subalbidella, Schlg. = **ochreella,** Staint. Recorded from Pilling Moss (J.B.H.); Bidston Marsh (J.F.B.); and Bidston, three specimens only (C.S.G.).

Fam. *LITHOCOLLETIDÆ.*

ŒNOPHILA, Steph.

Œnophila V-flavum, Haw. Ashton-on-Ribble (J.B.H.).

LITHOCOLLETIS, Zell.

Lithocolletis roborella, Z. Windermere (J.B.H.).

Lithocolletis amyotella, Dup. Windermere (J.B.H.).

Lithocolletis hortella, F. Windermere (J.B.H.).

Lithocolletis cramerella, F. Common and generally distributed among oaks.

Lithocolletis tenella, Z. Windermere (J.B.H.).

Lithocolletis Heegerella, Z. Windermere (J.B.H.).

Lithocolletis alniella, Z. = **alnifoliella,** Dup. Common wherever alders grow.

Lithocolletis irradiella, Staint. Windermere (J.B.H.).

Lithocolletis lautella, Z. Windermere (J.B.H.).

Lithocolletis ulmifoliella, Hüb. Locally common.

Lanc.—Croxteth Park (C.S.G.); Grange and Preston (J.H.T.); Manchester district, common (Staint. Man., ii, 417); Windermere (J.B.H.).

Ches.—Mobberley (J.C.).

Lithocolletis spinolella, Dup. Local, being recorded only from Lancashire; Chat Moss (J.C.); Preston district (J.H.T.); near Simmonswood Moss (C.S.G.); Windermere (J.B.H.).

Lithocolletis viminetorum, Staint. Local. Grange (J.H.T.); Liverpool district, among osiers (C.S.G.); Manchester, abundant (Staint. Man., ii, 417); Windermere (J.B.H.).

Lithocolletis salicicolella, Sircom. Recorded from the Liverpool district (C.S.G.); Longridge (J.B.H.) and Manchester (Staint. Man., ii, 418).

Lithocolletis pomifoliella, Z. Abundant among *Pyrus malus*.

Lithocolletis torminella, Frey. Manchester, common (Staint. Man., ii, 418).

Lithocolletis spinicolella, Staint. Locally abundant.

Lanc.—Preston (J.H.T.); Windermere (J.B.H.); Withington (J.C.); Manchester (Staint. Man., ii, 418).

Ches.—Liscard (C.S.G.).

Lithocolletis faginella, Z. Common in beech-hedges.

Lithocolletis coryli, Nic. Local among hazel.

Lanc.—Grange and Preston (J.H.T.); Manchester (Staint. Man., ii, 419).

Ches.—Knutsford (J.C.); Prenton (C.S.G.); Wirral (J.F.B.).

Lithocolletis Junoniella, Z. = **vacciniella,** Staint. Lancashire and Cheshire moorlands, as Dutton near Ribchester (J.B.H., Ent., xiii, 105); Longridge (J.B.H.); Staleybrushes (C.S.G., Intell., 1856, 76).

Lithocolletis quinqueguttella, Staint. A coast species, feeding on the dwarf sallow on the sand-hills at Lytham (J.B.H., J.H.T.) and Wallasey (C.S.G., J.F.B.).

Lithocolletis quercifoliella, Z. Common in oak woods.

Lithocolletis messaniella, Z. Among oaks, but not so common as the preceding. Recorded from Agecroft, near Manchester (J.C.); Liverpool: Aigburth Road and Edge Lane, among evergreen oaks (C.S.G.); Preston (J.H.T.); Windermere (J.B.H.).

Lithocolletis scopariella, Z. Dutton, near Ribchester (J.B.H., Ent., xiii, 105).

Lithocolletis ulicicolella, Staint. Local among gorse.

Lanc.—Fleetwood (J.B.H.) and Stalmine (J.H.T.).

Ches.—Between Poulton and Wallasey (C.S.G.); Prenton and Wallasey (J.F.B.).

Lithocolletis viminiella, Staint. Farrington and Grange (J.H.T.); Manchester (Staint. Man., ii, 420); Windermere (J.B.H.).

Lithocolletis corylifoliella, Haw. Common among hazel.

Lithocolletis caledoniella, Staint. Grange (J.H.T.) and Windermere (J.B.H.). Recorded also from Manchester (Staint. Man., ii, 421).

Lithocolletis Nicellii, Staint. Local. Croxteth (C.S.G.); Grange and Preston (J.H.T.); Windermere (J.B.H.).

Lithocolletis Dunningiella, Staint. Croxteth (C.S.G.); Grange (J.H.T., J.B.H., Ent., x, 40); Preston (J.H.T.); Windermere (J.B.H.).

Lithocolletis Froehlichiella, Z. Local.

Lanc.—Grange and Preston (J.H.T.); Huyton Quarry (C.S.G.); Windermere (J.B.H.).

Ches.—Tranmere, near Birkenhead (J.F.B.).

Lithocolletis Stettinensis, Nic. Local, recorded from Formby (C.S.G.); Preston (J.H.T.); Windermere (J.B.H.).

Lithocolletis Kleemanella, F. Formby (C.S.G.); Manchester (Staint. Man., ii, 422); Preston (J.H.T.); Clifton Park, Birkenhead (J.F.B.).

Lithocolletis schreberella, F. Preston (J.H.T.); Manchester (Staint. Man., ii, 422).

Lithocolletis emberizæpennella, Bouché. Local.

Lanc.—Woods at Hale (C.S.G.); Preston, common (J.H.T.); Windermere (J.B.H.).

Ches.—Eastham Wood (C.S.G.); Mobberley and Knutsford (J.C.).

Lithocolletis tristrigella, Haw. Locally abundant.

Lanc.—Cheetham Hill, Manchester (R. S. Edleston, Zool., 1845, 1220); Preston and Grange (J.H.T.); Prescot (C.S.G.).

Ches.—Bidston Hill (J.F.B.); Upton (C.S.G.).

Lithocolletis trifasciella, Haw. Generally distributed.

TISCHERIA, Z.

Tischeria complanella, Hüb. Common in oak woods.

Tischeria marginea, Haw. Locally common.

Lanc.—Grange and Preston (J.H.T.); Manchester (Staint. Man., ii, 413); Windermere (J.B.H.).

Ches.—Flaybrick Hill and Patrick Wood (C.S.G.); Wirral (J.F.B.).

Tischeria angusticolella, Z. Manchester (Staint. Man., ii, 413).

Tischeria dodonæa, Heyd. Grange (J.H.T.) and Windermere (J.B.H.).

Fam. *LYONETIDÆ.*

LYONETIA, Hüb.

Lyonetia clerkella, L. Recorded from Grange (J.B.H., Ent. Mo. Mag., xii, 163), Liverpool district (C.S.G.), and Silverdale (J.H.T.) in Lancashire, and Bowdon (J.C.) in Cheshire.

CEMIOSTOMA, Z.

Cemiostoma spartifoliella, Hüb. Locally common.

Lanc.—Grange and Preston (J.H.T.); Longridge (J.B.H.); Morley Green near Wilmslow (J.C.).

Ches.—Claughton and Bidston (C.S.G.); Tranmere (J.F.B.).

Cemiostoma Wailesella, Staint. Local.

Lanc.—Dutton near Ribchester, and Samelsbury (J.H.T.); Longridge (J.B.H.).

Ches.—Near Mottram (Staint. Man., ii, 426).

Cemiostoma laburnella, Staint. Locally common, among laburnums, but recorded only from Lancashire: Ashton (J.B.H.); Grange (J.B.H., J.H.T.); Manchester district, common (J.C.).

Cemiostoma scitella, Z. Local.

Lanc.—Flixton and Glazebrook (J.C.); Preston, common (J.H.T.); Pighue Lane, near Liverpool (C.S.G.).

Ches.—Tranmere (J.F.B.).

BUCCULATRIX, Z.

Bucculatrix nigricomella, Z.

VAR. **aurimaculella,** Staint. Recorded from Grange (J.H.T., J.B.H., in litt. and Ent. Mo. Mag., x, 40); Preston (J.H.T.); and Bidston (J.F.B.).

Bucculatrix cidarella, Z. Manchester, abundant (Staint. Man., ii, 427).

Bucculatrix ulmella, Z. Grange (J.B.H., J.H.T.); Preston (J.H.T.); and Manchester (Staint. Man., ii, 428).

Bucculatrix demaryella, Staint. Grange (J.B.H., J.H.T.).

Bucculatrix maritima, Staint. Fleetwood (J.B.H. in litt. and Ent. Mo. Mag., ix, 162); Stalmine (J.H.T.).

Bucculatrix frangulella, Goeze. Grange (J.H.T., J.B.H., Ent. Mo. Mag., x, 40).

Bucculatrix thoracella, Thunb. = **hippocastanella,** Dup. Grange (J.B.H.); Manchester (Staint. Man., ii. 429).

Bucculatrix cristatella, Z. Grange (J.B.H.).

Fam. *NEPTICULIDÆ.*

OPOSTEGA, Z.

Opostega saliciella, Tr. Recorded from Barton Moss (J.C.) and Preston (J.B.H.).

Opostega crepusculella, Z. Grange and Preston (J.B.H., J.H.T.); Bidston (C.S.G.).

TRIFURCULA, Z.

Trifurcula pallidella, Z. Recorded only from Dutton near Ribchester (J.H.T., J.B.H. in litt. and Ent., xiii, 105).

Trifurcula immundella, Z. Recorded from Dutton (J.B.H.); Lytham and Rivington (J.H.T.).

NEPTICULA, Z.

Nepticula pomella, Vaughan. Preston, Grange (J.B.H., J.H.T.).

Nepticula pygmæella, Haw.

Lanc.—Grange (J.B.H.); Liverpool district (C.S.G.); Preston (J.H.T.).

Ches.—Bowdon (R.S.E.).*

Nepticula ruficapitella, Haw.

Lanc.—Preston (J.H.T.); Windermere (J.B.H.).

Ches.—Bowdon (R.S.E.); lane leading from Bromborough to Eastham, on oaks (C.S.G.).

Nepticula tiliæ, Frey. Grange (J.B.H.).

Nepticula anomalella, Goeze. Recorded from Bowdon (R.S.E.); Grange (J.B.H.); Preston (J.H.T.); and the Liverpool district (C.S.G.).

Nepticula viscerella, Staint. Bowdon (R.S.E.).

Nepticula aucupariæ, Frey. Bowdon (R.S.E.); Grange (J.H.T.); and Windermere (J.B.H.).

Nepticula minusculella, H.S. Preston (J.B.H., J.H.T.).

Nepticula oxyacanthella, Staint. Bowdon (R.S.E.); Grange (J.B.H.); Preston (J.H.T.); Tranmere (J.F.B.).

Nepticula desperatella, Frey. Grange (J.H.T.); Windermere (J.B.H.).

Nepticula regiella, H.S. Bowdon (R.S.E.); Preston (J.B.H.).

Nepticula æneofasciella, H.S. Grange, Lytham (J.H.T.), and Windermere (J.B.H.).

Nepticula splendidissimella, H.S. Lytham (J.H.T.); Windermere (J.B.H.).

* This and following records of Nepticulæ at Bowdon are from a list given by R. S. Edleston, in the Zoologist for 1857, p. 5827.

Nepticula aurella, Staint. Abundant everywhere among bramble.

Nepticula Hodgkinsoni, Staint. Preston (J.B.H., J.H.T.).

Nepticula gratiosella, Staint. Bowdon (R.S.E.); Preston (J.B.H., J.H.T.).

Nepticula ulmivora, Hein. Dutton (J.B.H. in litt. and Ent., xiii, 105); Grange (J.H.T.).

Nepticula prunetorum, Staint. Bowdon (R.S.E.); Grange (J.B.H.).

Nepticula marginecolella, Staint. Preston (J.B.H., J.H.T.); Grange (J.H.T.).

Nepticula alnetella, Staint. Bowdon (R.S.E.); Preston (J.H.T.); Windermere (J.B.H.).

Nepticula centifoliella, Z. Preston (J.B.H., J.H.T.).

Nepticula microtheriella, Staint. Bowdon (R.S.E.); Grange (J.B.H.).

Nepticula betulicola, Staint. Bowdon (R.S.E.); Grange (J.B.H., J.H.T.).

Nepticula plagicolella, Staint. Bowdon (R.S.E.); Preston and Grange (J.B.H., J.H.T.).

Nepticula ignobilella, Staint. Bowdon (R.S.E.); Preston (J.B.H., J.H.T.).

Nepticula poterii, Staint. Grange (J.B.H.).

Nepticula glutinosæ, Staint. Preston (J.H.T.); Windermere (J.B.H.).

Nepticula luteella, Staint. Grange and Windermere (J.B.H., J.H.T.).

Nepticula sorbi, Staint. Preston and Longridge (J.H.T.); Windermere (J.B.H.).

Nepticula Woolhopiella, Staint. Grange (J.H.T.).

Nepticula argentipedella, Z. Bowdon (R.S.E.); Grange (J.B.H., J.H.T.).

Nepticula tityrella, Staint. Bowdon (R.S.E.); Grange (J.B.H.); Preston (J.H.T.).

Nepticula malella, Staint. Bowdon (R.S.E.); Grange district (J.H.T.).

Nepticula atricollis, Staint. Bowdon (R.S.E.); Grange (J.H.T.).

Nepticula angulifasciella, Staint. Bowdon (R.S.E.); Grange (J.H.T.); Preston (J.B.H., J.H.T.).

Nepticula arcuatella, H.S. Grange (J.B.H., J.H.T.).

Nepticula myrtillella, Staint. Windermere (J.B.H.).

Nepticula salicis, Staint. Bowdon (R.S.E.); Chat Moss (J.C.); Grange (J.B.H.); Preston (J.H.T.); Wirral (J.F.B.).

Nepticula castanella, Edlest. Bowdon (J.H.T.).

Nepticula fulgens, Staint. Grange and Preston (J.H.T.); Windermere (J.B.H.).

Nepticula floslactella, Haw. Common everywhere.

Nepticula lapponica, Wilk. Grange (J.H.T.); Windermere (J.B.H.).

Nepticula septembrella, Staint. Bowdon (R.S.E.); Grange (J.B.H., J.H.T.); Silverdale (J.H.T.).

Nepticula catharticella, Staint. Grange (J.B.H., J.H.T.); Silverdale (J.H.T.).

Nepticula intimella, Z. Grange (J.B.H.).

Nepticula Weaveri, Staint. Bowdon (R.S.E.); Dutton (J.B.H.); Staleybrushes (J.C.).

Nepticula trimaculella, Haw. Bowdon (R.S.E.); Leyland (J.H.T.).

Nepticula sub-bimaculella, Haw. Common everywhere.

Nepticula argyropeza, Z. Grange (J.B.H.).

Nepticula apicella, Staint. Grange (J.B.H.).

Nepticula (Trifurcula) pulverosella, Staint. Dutton (J.B.H.); Grange (J.H.T.).

Nepticula cryptella, Staint. Grange (J.B.H.).

BOHEMANNIA, Staint.

Bohemannia quadrimaculella, Boh. Preston (J.H.T.).

MICROPTERYGINA.

MICROPTERYX, Hüb.

Micropteryx calthella, L. Locally abundant, in flowers of Ranunculaceæ.

Lanc.—Childwall (C.S.G.); Grange and Preston (J.H.T.); Otterspool, near Liverpool (J.W.E.); Windermere (J.B.H.); Withington (J.C.).

Ches.—Bromborough Wood (J.W.E.); Dunham Park and Knutsford (J.C.); Patrick Wood near Bromborough, and New Brighton (C.S.G.).

Micropteryx aruncella, Scop. Recorded from Dunham Park and Knutsford by Mr. Chappell, and Manchester, common (Staint. Man., ii, 302).

Micropteryx Seppella, F. Local.

Lanc.—Grange and Preston (J.H.T.); Manchester (Staint. Man., ii, 303); Windermere (J.B.H.).

Ches.—Bidston and Tranmere (J.F.B.); Knutsford (J.C.); New Brighton (C.S.G.).

Micropteryx mansuetella, Z. Manchester (Staint. Man., ii, 303).

Micropteryx aureatella, Scop. = **allionella,** F. Local, but common where it occurs.

Lanc.—Chat Moss (J.C.); Grange (J.H.T.); Windermere (J.B.H.).

Ches.—Knutsford (J.C.).

Micropteryx Thunbergella, F. Local, and recorded only from Lancashire. Croxteth Wood, by beating hollies (C.S.G.); Grange (J.H.T., J.B.H., Ent. Mo. Mag., x, 40); Manchester (Staint. Man., ii, 303); Windermere (J.B.H.).

Micropteryx Sparmanella, Bosc. Local, and not recorded from Cheshire. Grange (J.H.T.); Manchester (Staint. Man., ii, 304); Simmonswood Moss (C.S.G.); Windermere (J.B.H.).

Micropteryx subpurpurella, Haw. Local, but abundant where it occurs.

Lanc.—Chat Moss and Prestwich (J.C.); Grange and Preston (J.H.T.); Windermere (J.B.H.).

Ches.—Dunham Park (J.C.); lane leading from Bromborough to Eastham Wood (C.S.G., J.W.E.); Wirral (J.F.B.).

Micropteryx unimaculella, Zett. Local.

Lanc.—Chat Moss (J.C.); Lancashire mosses (C.S.G.); Windermere (J.B.H.); Withnell (J.H.T.).

Ches.—Abundant in Delamere Forest (C.S.G., Ent., vi, 453).

Micropteryx semipurpurella, Steph. Local; recorded only from Lancashire. Chat Moss (J.C.); Grange (J.H.T.); Lancashire mosses (C.S.G.); Windermere (J.B.H.).

Micropteryx purpurella, Haw. On the mosses, recorded by R. S. Edleston from Coppy Wood near Middleton (Zool., ii, 735); by C. S. Gregson from the Lancashire mosses; and in Stainton's Manual (ii, 303) from the Manchester district.

PTEROPHORINA.

PLATYPTILIA, Hüb.

Platyptilia ochrodactyla, Hüb. Local.

Lanc.—Bedford Leigh (J.C.); banks of the Alt and at Hale (C.S.G.); Manchester (Staint. Man., ii, 440); Grange (J.B.H.); Pendlebury (R. S. Edleston, Zool., 1845, 1220).

Ches.—Bromborough Pool (C.S.G.); Wirral (J.F.B.).

Platyptilia Bertrami, Rössl. Recorded by J. B. Hodgkinson from Dutton near Ribchester (Ent., xiii, 105), and Grange.

Platyptilia gonodactyla, Schiff. = **trigonodactyla,** Staint. Common and generally distributed among coltsfoot.

AMBLYPTILIA, Hüb.

Amblyptilia acanthodactyla, Hüb. Recorded from Lancashire only. Dutton (J.B.H., Ent., xiii, 105); Grange (J.B.H.); Hale Marsh (C.S.G.).

Amblyptilia cosmodactyla, Hüb. **punctidactyla**, Haw. Local.

Lanc.—Hale (C.S.G.).

Ches.—Bidston and Tranmere (J.F.B.); Claughton (C.S.G.).

OXYPTILUS, Z.

Oxyptilus hieracii, Z. Recorded only from Bidston near Birkenhead by J. F. Brockholes.

Oxyptilus teucrii, Greening. Delamere (J.B.H.).

Oxyptilus parvidactylus, Haw. = **microdactylus**, Steph. Recorded only from Grange (J.B.H.).

MIMÆSOPTILUS, Wallgr.

Mimæsoptilus serotinus, Z. = **bipunctidactylus**, Haw. Local.

Lanc.—Grange (J.B.H.); Kenyon (J.C.); Manchester (Staint. Man., ii, 442).

Ches.—Knutsford (J.C.); New Brighton (C.S.G.); Wallasey sand-hills (J.F.B.).

Mimæsoptilus zophodactylus, Dup. = **Loewii**, Z. The only recorded capture of this species in Britain was at Southport by Gregson, a single specimen in August 1857, and recorded in the Zoologist for 1857, 5855.

Mimæsoptilus plagiodactylus, Staint. Recorded from Grange (J.B.H.); Manchester (Staint. Man., ii, 442); and Knutsford (J.C.).

Mimæsoptilus Hodgkinsoni, Gregson. Grange (J.B.H.).

Mimæsoptilus pterodactylus, L. = **fuscus**, Retz. Locally common.

Lanc.—Grange (J.B.H.); Pendlebury (R. S. Edleston, Zool., 1845, 1220); Warbreck Moor (C.S.G.).

Ches.—Dunham Park (J.C.); Wallasey sand-hills (J.F.B., J.W.E.).

ŒDEMATOPHORUS, Wallgr.

Œdematophorus lithodactylus, Tr. Grange (J.B.H., Ent., x, 40) and Manchester (Staint. Man. ii, 443).

PTEROPHORUS, Wallgr.

Pterophorus monodactylus, L. = **pterodactylus**, Hüb. Recorded from Grange (J.B.H.) and Wirral (J.F.B.).

LEIOPTILUS, Wallgr.

Leioptilus tephradactylus, Hüb. Grange (J.B.H.); Manchester (Staint. Man., ii, 443).

Leioptilus microdactylus, Hüb. Grange (J.B.H.).

ACIPTILIA, Hüb.

Aciptilia tetradactyla, L. Grange (J.B.H.).

Aciptilia pentadactyla, L. Common, but local.

Lanc.—Grange (J.B.H.); Irlam, Patricroft, and Withington (J.C.).

Ches.—Wallasey and Tranmere (J.F.B., C.S.G.); Liscard (J.W.E.).

ALUCITINA.

ALUCITA, Z.

Alucita hexadactyla, L. = **polydactyla,** Hüb. Local among honey-suckle in Cheshire; Bowdon, Knutsford, and Mobberley (J.C.); Delamere Forest (J.B.H.); Eastham Wood (J.W.E.); Wirral (J.F.B.).

SUMMARY.

Sub-Orders.	Total British Species.*	Number recorded for Lancashire and Cheshire.	Percentage.
Rhopalocera	65	47	72
Heterocera—			
Sphingina	39	25	64
Bombycina	111	66	59
Noctuina (including *Deltoides*)	324	223	68
Geometrina	279	204	73
Pyralidina and *Crambina* ...	161	86	53
Tortricina	343	209	61
Tineina...	708	465	65
Micropterygina...	12	11	91
Pterophorina and *Alucitina* ...	37	20	54
Total	2079	1356	65

* 'The Entomologist' synonymic list of British Lepidoptera, by Richard South, F.E.S. (1884), which offers the nearest approach to the classification adopted in the preceding pages, viz.: for the Macro-Lepidoptera, that of W. F. Kirby (European Butterflies and Moths); and for the Micro-Lepidoptera, that of Wocke (Catalog der Lepidopteren des Europäischen Faunengebiets).

LUDVIG KLEIN ON THE GENUS VOLVOX.

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THE interest in Volvox is truly perennial. From the time of Leeuwenhoek, who first described it nearly 200 years ago (1699), it has never lacked admirers among microscopists, and has again and again been the subject of investigation by biologists, both from the botanical and the zoological side. To say nothing of many others, the names of Ehrenberg, Williamson, Busk, Cohn, Stein, Butschli, and Wills, are honourably remembered in connection with Volvox, and to them we are indebted for much of the knowledge we now possess of the structure and life-history of this remarkable plant.

Quite recently, however, Klein has undertaken a reinvestigation of Volvox from the morphological and the biological standpoints, and in a recent issue of Pringsheim's Jahrbucher (Zwanzigster Band, Zweites Heft) has published the results of his researches, accompanied by a searching criticism of the descriptions and statements of previous writers on the subject. The whole paper is well deserving of careful study on the part of botanists and others, and may be strongly commended to their notice for its completeness, for the new and important facts which it brings to light, and for the admirable way in which the contradictory and inconsistent statements current in the literature are either harmonised or corrected. But there are certain portions of it to which the special attention of the botanical readers of 'The Naturalist' may be directed, and that with an object which will be apparent later on. These are the paragraphs that refer to the habitat of Volvox, the distinctive characters of the species, and the seasonal duration of the sexual and asexual colonies. On all these points our knowledge has hitherto been extremely imperfect, and not the least merit of Klein's paper is the fulness with which they are dealt with.

HABITAT.—Under this head it will be convenient to include the whole of the influences of the immediate environment as expressed in the vertical range, the physical features of the locality, the associated flora and fauna, and the meteorological conditions.

Klein found one or both species of Volvox in pools in the plain of the Rhine, and also in what he describes as stagnant old waters of the Rhine. By these latter it may be presumed he means the Rhine waters left behind in the shallows after an overflow. But he never

met with either species in the pools and turf waters of the more elevated regions of the Black Forest, i.e., at a height ranging from 900 to 1,300 metres.

My own experience of the British species, though limited, is in accordance with this. The localities in which my captures of Volvox have been most abundant are:—Rawcliffe near Goole, Askham Bog near York, pools in the neighbourhood of Wetherby, and—if I mistake not—Strensall Common—all low-lying and in the region of the plains. On the south side of Manchester, where I am now located, similar physical conditions prevail, and Volvox is of common occurrence.

The well-being of Volvox is of necessity affected by the plants and animals associated with it. The statement has been made that it thrives in company with *Lemna*, but Klein was not able to confirm this. He found it diminish in quantity as the *Lemna* increased, and the development was most abundant in pools where *Lemna* was absent, although *Sphagnum*, *Vaucheria*, *Conferva*, *Callitriche*, *Alisma*, and even *Equisetum limosum*, *Utricularia*, and *Chara* were present. With him it flourished best along with such filamentous Algæ as *Conferva*, *Mesocarpus*, and *Œdogonium*, and with only a few aquatic animals. Among the latter are several which feed on Volvox, and if these are present it speedily disappears. Small crustaceans, he says, are particularly destructive; but in addition to these he points to young Miller's Thumbs, and probably pond snails, as enemies of Volvox. *Elodea canadensis*, like *Lemna*, seems to be adverse to the well-being of Volvox when abundant, probably because it, too, prevents the access of light on which Volvox is so dependent.

Warm sunny days were found favourable to the development of Volvox, while continued wet caused it to disappear almost entirely. Here again my experience accords with this, and suggests further that wind unfavourably affects Volvox, either directly or indirectly.

Specific Distinctions.—Into the confusion which has hitherto prevailed on the question of specific distinctions, Klein has introduced something like law and order, and it is now possible to formulate with some precision the characters of two species of Volvox.

Looking back in the light of the results he has obtained by his own researches, he finds that the form described by Leeuwenhoek was the true *Volvox globator*, while the *Volvox globator* of Linnæus was a collective species. Ehrenberg accepted this name and gave it a legitimate position by his careful descriptions and figures. Under it, however, he appears to have confounded the vegetative colonies of two species, and he accorded it an asexual mode of repro-

duction only. His *Volvox stellatus*, with echinulate oospores, was merely the female colony of *V. globator*, and his *Volvox aureus*, with smooth oospores, the corresponding colony of another species, whose male colonies he regarded as generically distinct and named *Sphærosira volvox*. In 1854 Stein recognised the distinctness of the species with smooth oospores and named it *Volvox minor*, while Cohn proposed the name of *Volvox monoicus* for Ehrenberg's *V. globator*, and *V. dioicus* for Stein's *V. minor*, being inclined to regard both as sub-species of the old Linnæan *Volvox globator*. Subsequently (1882), Drude cleared up the somewhat entangled synonymy of these two species of Volvox, and sustained the claims of *Volvox aureus* to stand as the name of the second species against the later designations of Stein and Cohn. In the paper under consideration Klein follows Drude in naming these forms of Volvox, *V. globator* and *V. aureus* respectively, and furnishes sufficient details of the structure and life-cycle of each to enable us to see in what respects they agree and differ respectively.

Selecting what appear to be the most obvious and most pronounced characters, the diagnosis of each species will run as follows:

Volvox globator Ehr. *Volvox monoicus* Cohn.

Colonies: *Asexual*, globular; *Sexual*, oval; usually larger than those of *V. aureus*.

Protoplasts: Angular in the surface view and irregularly produced at the angles; smaller and more numerous than those of *V. aureus*; contractile vacuoles 2-6, usually 4.

Connecting threads or processes: not sharply distinguished from the protoplasts; much thicker than the cilia.

Volvox aureus Ehr. *Volvox minor* Stein; *Volvox dioicus* Cohn.

Colonies: *Asexual*, globular; *Female*, globular*; *Male*, oval; *Female* usually smaller than those of *V. globator*.

Protoplasts: Nearly or quite circular in the surface view; fewer than in *V. globator*, but larger in size; contractile vacuoles 2.

Connecting threads or processes: sharply distinguished from the protoplasts; as fine as the cilia.

The connecting threads or processes here referred to are the strands of protoplasm which connect the protoplasts of the individual cells. In *V. globator* they are mere continuations of the processes of the protoplasts, and are comparatively stout; in *V. aureus*, whose protoplasts are devoid of such processes, they arise from the surface and are extremely fine filaments. Klein has raised again the question as to whether these threads are continuous, bringing the

* In Spring a few are oval, and have a small nipple at the posterior end.

protoplasts into physical connection with one another, or whether they are interrupted midway by a 'middle lamella.' He pronounces in favour of the latter view, without, however, contending that such a condition obtains in all cases without exception. My own observations long ago led me to the conclusion that the threads were continuous, and so far a re-examination of my preparations and of fresh material has only confirmed me therein. But Klein appears to hold strongly to his view of the state of affairs, and in the face of this it would be unwise to insist upon a contrary view until a further investigation has been made, and his methods of treatment have been tested.

It will be noticed that in the above diagnosis the monœcious and dicœcious conditions are not mentioned, whereas by Cohn they were emphasised and utilised as important specific distinctions. Klein, however, shows that they are not so constant as has been supposed, and that parthenogonidia, antheridia, and oogonia may occur in nearly all possible combinations, either simultaneously or successively.

Seasonal Duration of the Various Colonies.—Stein and Cohn interpreted the life-cycle of Volvox as an alternation of generations, the asexual colonies occurring first and for a long period, and the sexual ones later on, or on the drying-up of the pond. Klein finds, however, that the relations of the various colonies are much more complicated than this interpretation would lead us to expect. In *Volvox aureus* asexual propagation goes on abundantly in the early spring, but soon dicœcious sexual colonies make their appearance, and the normal alternation is completed. But while this occurs in a part of the asexual series, the rest continue to multiply asexually into the summer, and form what Klein, for brevity, names the summer series. When subsequently sexual reproduction occurs in this series, the distinction between sexual and asexual colonies appears to be partially or entirely lost. The history of this summer series, combined with that of the earlier one, leads Klein to the conclusion that in *Volvox aureus* the alternation of generations occurs in three ways: a normal typical one, in which the asexual generations are followed by dicœcious and *pure* sexual colonies, and two others which he considers as phenomena of adaptation. In one of the latter the series of asexual colonies is followed by dicœcious sexual ones, but the males are not pure, seeing that, besides antheridia, they contain parthenogenetically produced daughter colonies. In the third form of alternation the asexual generations are followed by sexual *monœcious* colonies which are *proterogynous*. Into the further complications which occasionally

occur in these three groups of alternating generations he does not enter, regarding them as exceptional; but he emphasises the fact that sexual activity is uninterrupted from March to November.

With regard to *Volvox globator*, his own observations and those of others, lead Klein to the conclusion that this species also probably possesses more complicated sexual relationships than is generally supposed, and these seem to be connected in some way with the time of the year. He observed oospores in May and June, Falkenberg at the end of June, Stein in August, and Cohn, as well as Klein himself, in October and November. It would seem, too, that the monœcism of this species is occasionally lost, and that colonies occasionally become proterandrous, and others perhaps proterogynous. Other departures from the usual development are also mentioned, but these need not detain us, and we will only add that asexual and sexual colonies planted by Klein in May remained sterile during the whole summer, and only formed the second generation of oogonia at the beginning of November.

Reflecting on the facts adduced by Klein on the points dealt with in the preceding paragraphs, I have been impressed with the smallness and indefiniteness of the knowledge we possess of the biology of the British forms of Volvox, as also with the fact that English writers seldom distinguish the species met with. In the course of my own experience I have seldom gathered the true *Volvox globator* as now defined by Klein, and most of the specimens gathered by others that have come under my notice have been *Volvox aureus*. Moreover, so far as I am aware, little attention has been paid in this country to the seasonal succession and duration of the various colonies and generations, and the physical and meteorological conditions under which they occur. This being so, may I suggest to the botanical readers of 'The Naturalist' the desirability of collecting data with a view to extending our knowledge on these matters? I have myself taken up the subject in the district round Manchester, and have already obtained valuable assistance in the work. As, however, the observations cannot be too widely spread, either personally or territorially, it would be an advantage to have the co-operation of Yorkshire botanists, so that the results which we may hope to obtain may be applicable to the two great counties of Yorkshire and Lancashire, if not to a still wider area. Though hardly necessary, it may be well to add that those who act upon the above suggestion should note, among other details, the species of Volvox they collect, the associated flora and fauna, the nature, surroundings, and elevation of the pond, and the state of the weather, wind, etc., at the time of collection.

March 1890.

THE TREE SPARROW IN THE LAKE DISTRICT.

Rev. H. A. MACPHERSON, M.A., M.B.O.U., Etc.,
Author of the 'Visitation of Pallas's Sand-Grouse to Scotland,' etc.

Mr. Whitlock is no doubt right in his suggestion that the Tree Sparrow is a scarce bird in the North of England; or at least in the North-West of England, for which district alone I am responsible. In Cumberland it occurs very sparingly, even in the winter months, when it is chiefly noticed; as in January 1890, when, of five hundred Sparrows caught for shooting matches near Carlisle, three birds proved to be identical with *this* species. I have seen it breeding near Howtown; Mr. Duckworth found it nesting near Kirkoswald, and a third colony exists on our coast; but I cannot name with certainty any locality for its breeding in Westmorland, or in the adjacent district of Furness. Many years ago I found it nesting in an old wall at Fontainebleau; and anyone who visits the Paris Bird Market in the month of June will find young birds of this species and the House Sparrow in nearly equal numbers, young feathered chicks being offered for half a franc a piece by the enterprising bird merchants. Such, at least, was my experience. Some ten years ago we used to find the Tree Sparrow nesting in pollard willows near Oxford; and there I noticed a point which Mr. Whitlock has not discussed, viz., that this species is apt to *flock* with Greenfinches (*Ligurinus chloris*) and other small birds in the autumn months. Mr. Whitlock does not allude, either, to this species fraternising with the House Sparrow; but where the two species breed in proximity, individuals will be found to seek the company of the other species. A very charming colony of Tree Sparrows, perhaps the strongest of the half-a-dozen colonies that we know to exist in the Western Highlands, frequents a ruined chapel, the shrine of St. Donan, in the island of Eigg. Since it was noticed by Mr. W. Evans, in 1884, it has been strictly protected by my relatives as they are proud of their Tree Sparrows. I visited the birds in 1885 and 1886, and found them on good terms with the House Sparrows; I have a note, for instance, of spending twenty minutes in quietly watching a party of five Tree Sparrows nesting in a thatched roof; the centre of the party was a lively House Sparrow, which seemed to enjoy the company of his neighbours amazingly. Whether the two species interbreed in a wild state, I cannot positively say. I saw, in Eigg, one bird that might be a hybrid; on the Rhine I once met with a bird that I felt quite satisfied was a half-breed, but the day being a

Sunday, I had left my gun at home, and could only scrutinise him through a glass. Bechstein long ago stated that, *in captivity*, the two species interbreed. In 1880 a male House Sparrow paired with a female Tree Sparrow in an aviary at the Zoological Gardens, but their eggs proved unfertile. Such was usually the experience of Mr. Otty, of Norwich, who eventually succeeded in obtaining a fine hybrid between the two species. At Mr. Gurney's kind suggestion, I examined this interesting bird at Norwich, August 26th, 1887. It showed much of the Tree Sparrow in its plumage, and also in its actions, but the shape seemed to correspond closely with that of the House Sparrow. But to return to the wild Tree Sparrow. I observe that Mr. Whitlock says nothing about the song of the species. In 1884, Mr. Whitaker recorded, in the 'Zoologist,' *his* first experience of the song of the Tree Sparrow (Zool., 1884, p. 232). But, long before *our* time, the late Edward Blyth drew attention to the song of the Tree Sparrow, remarking that the Tree Sparrow, like the common species, has a great variety of chirrups, one of which is peculiarly musical and sweet, and may be rendered 'pee-cu-weep.' Its proper song, he says, consists of a number of these chirps, intermixed with some pleasing notes, delivered in a continuous strain, sometimes for many minutes together (cf. Mag. Nat. Hist., vii. p. 487). Now, having kept Tree Sparrows in confinement, I know their notes tolerably well, and found that in captivity the males sang from March onwards. In 1885 I listened to one of the wild Tree Sparrows in Eigg, singing merrily, on the 1st of July, when the earlier broods were strong on the wing. This seemed late. But in 1881 I heard and saw a male Tree Sparrow singing the full song of the species, in a fruit tree that grew in a road-side orchard near Montreux, in September. I believe that this is the first record of the Tree Sparrow singing in autumn. I, at all events, have not drawn the attention of any but my friends to the fact previously. I do not wish to discuss the variety of situations selected as breeding-quarters by the Tree Sparrow, and ranging from the chalk cliffs of Kent to the pollard willows of the Thames, and the old ruins and stone walls affected in the north, with much besides. But there is just one other point that may interest Mr. Whitlock, to whom we are so much indebted for his admirable paper. Some years ago, when I kept a large number of British birds in confinement, it used to interest us to allow our birds to range about our rooms. But I found that Tree Sparrows, if liberated from their cages, not only flew directly for the nearest window panes, with great swiftness and force, but that they almost always *lamed* themselves in so doing. Other birds also flew at times against the panes, and sometimes killed themselves, as occurred to two light Goldfinch

and Canary Mules, which we valued and were sorry to lose; but these did not lame their legs in any instance, while the Tree Sparrows constantly did so. I could only explain the apparent anomaly by supposing that, in flight, the Tree Sparrow carries the legs more extended, and further from the body, than most other birds.

Allow me to say, in conclusion, that I shall be glad if any readers of 'The Naturalist' can assist me in discovering any new breeding-stations of the Tree Sparrow during their summer excursions through the English Lake District. It is difficult for any one person to work a faunal area without a little assistance from without; and to acknowledge assistance received is always a pleasurable duty.

February 1st, 1890.

NOTE—HYMENOPTERA.

Sirex juvencus near Alford, Lincs.—At Tothill, near Alford, Miss Susan Allett took a female of this species on the 18th September, 1889. The specimen is now in my possession.—Jas. Eardley Mason, 14th February, 1890.

NOTE—MOLLUSCA.

Trent Shells.—Among a large number of shells obtained last year from sand dredged from the river Trent above Gainsborough, Lincolnshire, I have found the following species and varieties:—*Cyclas rivicola*, *Paludina vivipara*, *Anodonta cygnea*, *A. anatina*, *Unio pictorum*, with varieties *rostrata* and *curvirostris*, *U. tumidus*, with vars. *radiata* and *arcuata*. There are also several varieties apparently unnamed as British.—George Roberts, Lofthouse, Feb. 19th, 1890.

NOTES—BIRDS.

Great Grey Shrike at Middleton, Leeds.—Miss Maude, of Middleton Lodge, sent to me for identification a specimen of *Lanius excubitor*, picked up dead, though warm, in Middleton Wood, three and half miles south of Leeds Bridge (and only just outside the Borough boundary), on the 17th inst. It is a female (by dissection), and has the single white bar of var. *L. major* on the primaries.—Edgar R. Waite, The Museum, Leeds, 24th Jan., 1890.

Red-throated Diver at Alford, Lincs.—Mr. Jas. Eardley Mason sent to the Museum, through Mr. Roebuck, a specimen of this bird (*Colymbus septentrionalis*). It is in full winter plumage, and when dissecting I found it to be a female. Mr. Mason informs me that it was taken alive by a farm labourer in a turnip-field, on the 27th December last, at Alford, seven miles from the sea.—Edgar R. Waite, The Museum, Leeds, 13th January, 1890.

NOTE—MOSSES.

Grimmia torquata Hornsch. in fruit.—This moss, of which the fruit has hitherto been unknown, is now reported (Revue Bryologique, No. 1, 1890, p. 16) to have been found fruiting freely in the mountains of Northern Idaho, U.S.A., at an altitude of 6,000 ft., by Mr. J. B. Leiberg, in March of last year (1889). This is the *Gr. torta* Nees. of Wilson's Bryologia, and it will be interesting to be assured that this is really the true fruit, though it is not described, as Dr. Braithwaite says (Moss Flora, vol. ii. p. 15) that 'the supposed fertile specimen of Leibman was due to capsules of *Amphoridium Lapponicum* growing intermixed.' Mr. Leiberg also claims to have found the rarely-fruiting *Gr. Hartmani* Schp. in the same locality in fruit. British Bryologists look out!—C. P. Hobkirk.

Naturalist,

THE DOTTEREL IN YORKSHIRE.

Rev. H. A. MACPHERSON, M.A., M.B.O.U., Etc.,
Author of the 'Visitation of Pallas's Sand-Grouse to Scotland,' etc.

Although the late Dr. Heysham examined eggs of the Dotterel (*Eudromias morinellus*) taken on a mountain in the north-west of England in the year 1784, the fact of their identity was not recorded in print until long after; and hence, although Dotterel visited the mountains and marshes of the North of England in comparatively large numbers during the early years of the present century, yet the question *whether* the species really *bred* south of the Scottish border was actively canvassed by Yarrell and some of his contemporary ornithologists. It naturally fell to the lot of the late T. C. Heysham, then the most prominent ornithologist in the North of England (for Mr. Hancock was young, and Hewitson had not yet made his reputation), to investigate the question and to solve the mystery that hung round the movements of the Dotterel among the mountains of the North. I do not propose on the present occasion to discuss the question afresh, but only to quote one or two letters relating to Dotterel in *Yorkshire*, in the belief that even these meagre chronicles of the bird may be of interest to some, since upwards of sixty years have elapsed since they were first penned.

The first letter is that of a Mr. John Brown, written in answer to Heysham's inquiries, and dated from Marble Mills, Stone House, Dent, July 15th, 1831. It runs thus:—

'Sir,—I am sorry to say, in reply to your favour of the 12th inst., that your application for eggs of the Dotterel is at least one month too late. The birds have nearly all left the hills. But have you not made a mistake? I think it possible that in the hurry of writing you have said eggs instead of skins. Great numbers of these are preserved and sold to anglers, but I am told that the eggs are seldom taken. If you wish to have a few skins, pray inform me, and I will send you some. Late in the season as it is for these birds to be on the hills, and it is unusual for them to remain so long, I believe I can yet procure two or three fresh ones.'

The following year we find Heysham applying to John Robinson of Stone House, Dent, on the 16th of May, but the letter was delayed in transit. Robinson replies:—'I am afraid it will be out of my power to procure you a nest with eggs. There is some dispute whether they breed or not. Some are of opinion they do, others the contrary. I have never yet met with anybody who had found a nest. I called a few days ago on a man who partly makes it his business to

look after them. He informed me that lately he shot a bird Dotterel [sic], which on opening he found contained an egg, which puts the matter out of dispute. He informs me that for the last four years the bird has become more plentiful, which is to be wondered at, considering that immediately upon its being ascertained that they have arrived, everyone that can raise a gun is after them. . . . About the 15th or 16th of last month [? May 1832], a flock of nine or ten arrived. One of our men shot two of them.'

Robinson appears to have taken an active interest in assisting Heysham, for on the 29th of August the same year, 1832, Heysham received a couple of Dotterel shot on Woofell, with a note, in which the following passage occurs:—'I have been repeatedly on the mountains during the summer, but could never meet with any [Dotterel]. I think that there is little doubt that they leave us in the spring and return again in September, and remain a little while with us, prior to leaving our island for the winter. I would suppose that they [the birds despatched with the letter] are male and female or a young and an old bird. I am sorry one of them is hurt in the plumage round the neck. You will see, by the map of Yorkshire, that Woofel is very high land.'

The foregoing is all the information relating to the Dotterel *in Yorkshire* that I have hitherto unearthed in excavating—so to speak—the ornithology contained in the correspondence of the late T. C. Heysham, placed in my hands by his relatives. Let me conclude with two short passages, one relating to Norfolk, the other to London. In a letter written from Yarmouth on *March 25th*, 1843, Mr. W. R. Fisher informs Heysham:—'I saw . . . two or three Dotterel this morning at a dealer's in Yarmouth.' In a second letter of April 25th, 1843, Mr. Fisher adds: 'It was *Charadrius morinellus*, and not the *C. hiaticula*. I mentioned it, because, as you observe, I thought it was earlier than usual.' In a letter dated from Ryder Street, St. James, September 7th, 1845, Yarrell remarks to Heysham: 'Dotterel were more numerous last spring in the London markets than usual; I counted seventeen couples at the shop of one poulterer's at one time.' This latter incident was embodied in Yarrell's 'British Birds.'

NOTE—MAMMALIA.

Natterer's Bat at Bingley, Yorkshire.—Towards the close of last summer I obtained, through a friend, a specimen of a Bat from the belfry tower at Bingley, which I have to thank Mr. Roebuck for identifying as *Vespertilio nattereri*. According to the Transactions of the Bradford Naturalists' Society, this makes the first record of this species for Airedale.—HARRY B. BOOTH, Frizinghall, Shipley, February 8th, 1890.

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BIRD-NOTES FROM THE TEES DISTRICT, DURING THE LATE AUTUMN AND WINTER MONTHS, 1889-90.

ROGER LOFTHOUSE,
Middlesbrough-on-Tees.

Small flocks of Dunlins (*Tringa alpina*) and Ringed Plovers (*Ægialitis hiaticula*) frequented the mud-flats and sands at the Tees estuary all the summer as usual.

The autumn migration set in about the end of July. On the 31st, Terns were noticed, probably the Common or Arctic species (*Sterna fluviatilis* or *S. macrura*).

On the 5th of August the flocks of Dunlins and Ring Dotterels had increased in size, and a few Knots (*Tringa canutus*) were seen, and also two or three Sheldrakes (*Tadorna cornuta*). On the 17th, Sanderlings (*Calidris arenaria*) were first observed, and a mature bird was shot; Knots were also observed. On the 21st Sanderlings were more common. On the 22nd an extremely large flock of Arctic Terns was noticed in the early morning resting on the sands (they were associated with Gulls of various kinds); one or two were shot for identification. These Terns were noticed in the same place on several successive mornings. On the same date a Curlew Sandpiper (*Tringa subarquata*) was shot—a good specimen, and I heard of another being shot about the same date. On the 23rd, early in the morning, I fell in with a flock of about fifty Little Stints (*Tringa minuta*), and shot one or two for identification; they settled by the margin of a small pool close to where I happened to be concealed, and I had a good chance of observing their quick and lively movements in the shallow water as they probed their bills into the mud. Knots and Sanderlings were more common at this date, and there were immense flocks of Dunlins and Ring Dotterels and a good few Curlews (*Numenius arquata*) were about. I also noticed about half a dozen Duck, which I think were Teal, but the light at the time was not very good. On the 24th several Bar-tailed Godwits (*Limosa lapponica*) and Turnstones (*Strepsilas interpres*) were noticed, and two of the former shot, and one or two Common Terns (*Sterna fluviatilis*) were shot for identification in the place frequented by the Terns before mentioned. A small flock of Little Stints were also noticed, and Sanderlings were frequently seen; this is one of the most restless of shore birds, being always in motion, and running

at a very rapid pace for so small a bird. On the 25th I noticed three or four darker birds in the flock of Terns; these were probably Black Terns (*Hydrochelidon nigra*). On this date I picked up a fine Turnstone in winter plumage. About the end of August I heard of two Little Stints being shot at the Durham side of the Tees estuary, and one at Redcar. Some Sandwich Terns (*Sterna cantiaca*) were also shot at Redcar.

About the second week in September I noticed a flock of Terns about ten miles up the river, apparently Arctic or Common Terns, or probably both. About the 17th September an immature Ruff (*Machetes pugnax*) was shot in Cowpen Marshes, and on the 18th two Spotted Crakes (*Porzana maruetta*). On a visit to the Tees Breakwater in the early morning of the 18th September, I noticed four or five Cormorants (*Phalacrocorax carbo*) fishing on the sea side of the breakwater close in to the shore; this is a favourite fishing-ground for Cormorants. The morning was bright and the birds seemed singularly large as they circled round and round, every now and again dashing with lightning rapidity into the seething water, sending the spray several feet high, and emerging again in a few moments. A few hours later these same birds may be seen sitting on the rocks opposite Huntcliffe, with their wings spread out to the sun to dry, and presenting a very odd and curious spectacle. Numbers of Gulls and a few Skuas were about, and we witnessed some very pretty chases, the latter invariably seeming to effect his purpose, as evidenced by his sudden drop after a severe chase, to intercept the fish given up by the Gull. On this same morning the sands between the breakwater and Redcar were alive with Wheatears (*Saxicola œnanthe*) and Pied Wagtails (*Motacilla lugubris*), particularly the former, and there was evidently a migration taking place overhead as well; numbers of Larks seemed to be coming in from the north or north-west, and passing on inland.

Great flocks of Lapwings (*Vanellus vulgaris*) and Starlings (*Sturnus vulgaris*) have been about this district all the winter, owing, I suppose, to the very open weather we have had. A Wryneck was shot in the district in the late autumn, and a Rose-coloured Pastor (*Pastor roseus*) was shot out of a flock of Starlings at Redcar, and came into the hands of Mr. T. H. Nelson. Fieldfares (*Turdus pilaris*), Redwings (*T. iliacus*), and Hooded Crows (*Corvus cornix*) have been here in their usual numbers.

Of the Sand-Grouse (*Syrrhaptes paradoxus*) which favoured this district with their presence in some numbers during the late invasion, I have heard nothing lately, and I question very much whether there is one alive in the district.

Naturalist,

BIRD-NOTES

From Redcar and Tees Mouth for 1889-1890.

THOMAS H. NELSON, M.B.O.U., Etc.,
Redcar.

In continuation of my notes for 1888 ('Naturalist,' 1889, p. 81), I now give an account of ornithological occurrences for 1889-90. I have to regret that the record is of so meagre a quality, but perhaps the remarkably mild winter may account for the great scarcity of birds.

1889. January 3rd.—Eight Swans were noticed at 10 a.m. about a mile out at sea, flying to the N.W.

January 30th.—Great quantities of shore-birds were on the Tees sands, but they were quite unapproachable with an ordinary gun.

February 14th.—A Green Cormorant (*Phalacrocorax graculus*) was killed in the river by a Redcar fisherman. The Shag is, in my experience, a rather rare bird in this district.

February 15th.—I purchased a Red-necked Grebe (*Podiceps griseigena*) in winter plumage, which had been picked up alive on the sands.

About the end of May a Grey Plover (*Squatarola helvetica*) in breeding plumage, was shot by the river Tees, near Lackenby.

During the summer a local taxidermist had four young Hawfinches (*Coccothraustes vulgaris*) brought to him, and he is of opinion that they were from two different broods. Two of them (male and female) he reared, and they are now thriving and in good condition. It would not be advisable to indicate the exact locality where the nests were found, but I may say that it was within a mile or two of Redcar.

August.—During the middle and latter part of this month shore-birds arrived in considerable numbers. About twenty Little Stints (*Tringa minuta*) and two or three Pigmy Curlews (*T. subarquata*) were shot; two of the latter were adult birds. Knots (*T. canutus*) and Turnstones (*Strepsilas interpres*) were also very numerous towards the end of the month; two of the former with red breasts were procured.

August 30th and for several days afterwards, Sandwich Terns (*Sterna cantiaca*) passed to the S. in small parties of three or four. While off in a boat E. of Redcar I shot two, both mature specimens.

September 6th.—My friend Dr. Kershaw shot a Pigmy Curlew (*Tringa subarquata*) with partly red breast, from a flock of Dunlins (*Tringa alpina*), and on the 9th he shot an immature example of Buffon's Skua (*Stercorarius parasiticus*). The Skua tribe was well represented in September, the majority being *S. crepidatus*, but on one occasion, when sailing between Redcar and Saltburn, I noticed

several *S. pomatorhinus* in adult plumage. 11th.—Duck (*Anas boschas*) and Wigeon (*Mareca penelope*) passed in large flocks during a N.E. gale; I shot two of the latter, both immature birds.

October 6th.—An immature example of Sabine's Gull (*Xema sabini*) was shot in the Tees Bay, and came into the possession of a Redcar sportsman, from whom I purchased it. 12th.—N. gale, rain. A great flight of Ducks passed, also a few Hooded Crows (*Corvus cornix*) and Woodcock (*Scolopax rusticola*). Two Spotted Crakes (*Porzana maruetta*) were obtained on the marshes near Middlesbrough. 13th.—N. wind, light. Larks (*Alauda arvensis*) and Hooded Crows (*Corvus cornix*) crossed over in large flocks. A Fulmar Petrel (*Fulmarus glacialis*) was captured in a rather extraordinary manner; it alighted on the sea near the wreck of a screw-steamer on which some fishermen were working; one of them put off in a small boat, armed with a piece of wood, which he threw at the Fulmar, hitting it on the head and stunning it.

I examined a Peregrine Falcon (*Falco peregrinus*), which had been shot near Ingleby-in-Cleveland, and brought in to the Middlesbrough taxidermist to preserve.

November 23rd.—A Rose-coloured Pastor (*Pastor roseus*), the first I have known in this neighbourhood, was shot at West Coatham, and taken to our local bird-stuffer.

1890.—Early in January I was informed that some Shore Larks (*Otocorys alpestris*) had been observed at the Tees mouth. On the 29th one was shot, and I went out several times to see if I could fall in with them, but, although I saw a few each time, they were very wild and I was not successful in getting a shot; but on February 14th I managed to secure six, and saw seven or eight more feeding among the rough grass near the shore edge.

During the latter part of January and beginning of February the fishermen reported numbers of Little Auks (*Mergulus alle*) at sea. On February 1st, one was picked up on the sands, it having been killed at sea and washed ashore.

February 26th, 27th, and 28th.—Several Puffins (*Fratercula arctica*), Guillemots (*Lomvia troile*), and Little Auks (*M. alle*) were driven ashore in a strong N.E. gale. Some of the Puffins and Guillemots were alive when found. February 28th.—Another Shore Lark (*Otocorys alpestris*) was shot at the Tees mouth.

Two Great Spotted Woodpeckers (*Dendrocopus major*) were killed near Redcar in the course of the autumn; in all probability they belonged to the migratory flight which has been observed from other stations along the coast.

March 5th, 1890.

Naturalist,

THE FOSSIL STURGEON OF THE WHITBY LIAS.

A. SMITH WOODWARD, F.G.S., F.Z.S.,
Of the British Museum (Natural History), South Kensington.

For a long period the occurrence of large fibrous fish-bones in the Upper Lias of Whitby has been well known; and these fossils, as pointed out by Mr. Simpson,[1] are especially abundant in the bituminous shale immediately above the jet rock. So long ago as 1843 the bones were submitted to Agassiz, who recorded them, without description, under the name of *Gyrosteus mirabilis*;[2] and the genus they represented was placed among the somewhat indefinite extinct group of Cœlacanths. In 1858 Sir Philip Egerton[3] expressed the opinion that the problematical remains were truly referable to a Sturgeon, resembling *Chondrosteus* from the Lower Lias of Lyme Regis; and in 1876 Prof. J. F. Blake[4] published some desultory notes on the bones, without making any very satisfactory comparisons. During the last few years the writer of the present notice has had the privilege of studying nearly all known examples both of the Whitby fish and of its congener from Lyme Regis; and the principal results of the investigation were published last year by the Geologists' Association of London.[5] It now appears that most of the bones can be interpreted by reference to those of the common living Sturgeon (*Acipenser*), with the aid also of certain known facts in the structure of *Chondrosteus*.

Beyond the fact that the jaws were toothless and the external bones unornamented, little can as yet be ascertained concerning the head of the fish. There seems to be an example of the great basal (*parasphenoid*) membrane bone of the cranium in the Whitby Museum (No. 338); and other elements perhaps referable to the roof of the skull are also preserved in the same collection. The most characteristic and easily-recognised bone, however, is the great supporting element of the jaws, connecting them with the skull.

[1] M. Simpson, 'The Fossils of the Yorkshire Lias,' ed. 2, 1884, p. xiii.

[2] L. Agassiz, 'Rech. Poiss. Foss.,' vol. ii, pt. ii (1843), p. 179.

[3] P. M. G. Egerton, Phil. Trans., 1858, p. 883.

[4] J. F. Blake, in Tate and Blake, 'The Yorkshire Lias' (1876), p. 256, pl. ii, figs. 2, 3.

[5] Smith Woodward, 'On the Palæontology of Sturgeons,' Proc. Geol. Assoc., vol. xi (1889), pp. 32-36, figs. 2-7.

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This is shown, of one-third the natural size, in the accompanying fig. 1. It is a long bone, constricted in the middle, and with a triangular expansion at each extremity; the upper portion being the smaller and compressed antero-posteriorly, while the large inferior

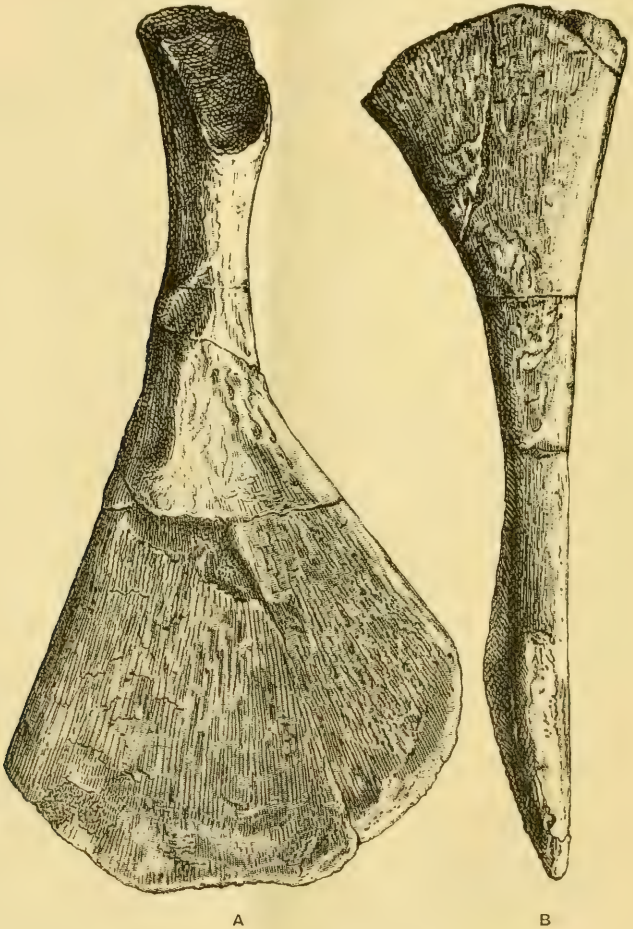

Fig. 1. Right hyomandibular bone of *Gyrosteus mirabilis*, lateral aspect (A) and posterior aspect (B); one third natural size.

expansion is compressed from side to side. The bone agrees in shape exactly with the corresponding element of the living Sturgeon (fig. 8$_3$), but in the latter the greater part of the lower expansion remains unossified; in *Gyrosteus*, indeed, the ossification is only

complete in the adult, small examples of the hyomandibular appearing much less extended below than the one here figured. Some of the parts of the hyoid arch are also bony in the Whitby fish, and two elements, probably to be regarded as *ceratohyals*, are shown, of one-third the natural size, in fig. 5. There is at least one large quadrangular bone in the gill-cover, but no branchiostegal rays have been observed. The gill-arches were partially-ossified rods, as in the

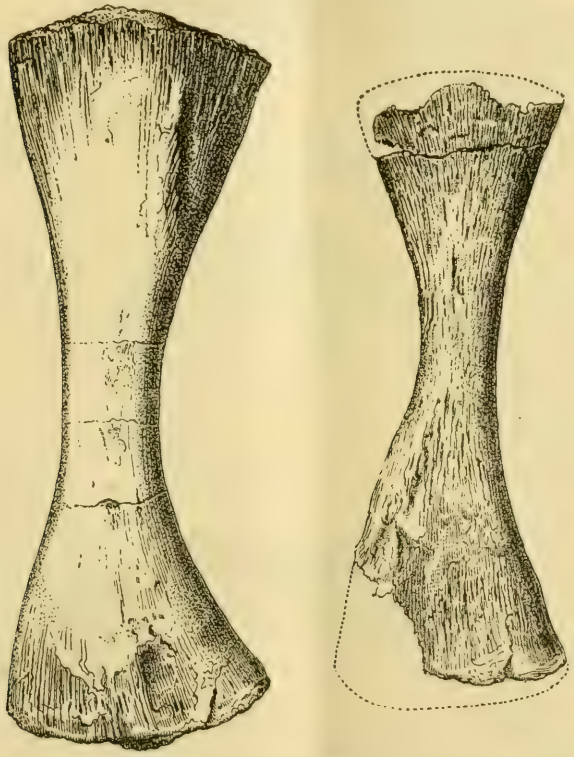

Fig. 2. Ceratohyal bones of *Gyrosteus mirabilis*; one-third natural size.

modern Sturgeon (fig. 8$_6$), these being met with as long, hour-glass-shaped bones, more slender than (but otherwise not unlike) the supposed ceratohyals just referred to.

Of vertebræ there are no traces, and the notochord must thus have been persistent in *Gyrosteus*, as in all Sturgeons. There seem, however, to be distinct slender ribs in a specimen in the British Museum; and Prof. Blake has made known some supposed neural arches.

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The bones of the shoulder girdle, supporting the pectoral fins, so far as known, agree well in shape with those of the living *Acipenser*, only differing in the absence of all external ornamentation. The great *clavicle* is shown, of one-sixth the natural size, in fig. 3, and

Fig. 5.

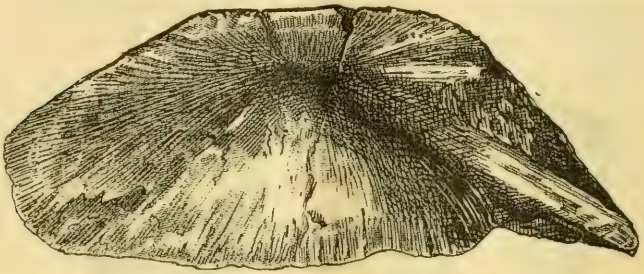

Fig. 4.

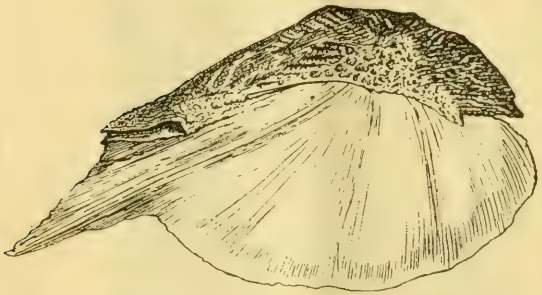

Fig. 3.

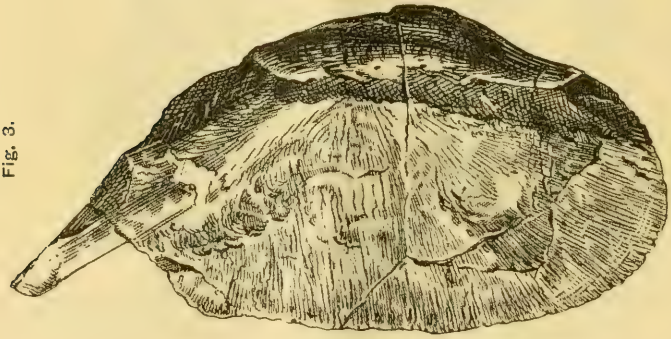

Fig. 3. Left clavicle of *Gyrosteus mirabilis*, outer aspect; one-sixth natural size.
Fig. 4. Left clavicle of the recent *Acipenser*, outer aspect; reduced.
Fig. 5. Right supraclavicle of *Gyrosteus mirabilis*, inner aspect; one-sixth natural size.

compared with the corresponding bone of the recent fish in the accompanying fig. 4; while another element, evidently the *supra-clavicle*, is represented in fig. 5. In the pectoral fin the foremost rays are stiff, not jointed; and a small example of the fin in the collection of Mr. S. Chadwick, F.G.S., Malton Museum, seems to

exhibit the minute superficial asperities so characteristic of the pectoral fin of *Chondrosteus*. The rays of the other fins appear to be all closely jointed, and a large portion of the tail-fin, displaying this character, is shown, of one-third the natural size, in fig. 6. These caudal fin-rays are unjointed for a short distance at their inserted end, but they soon become crossed by closely-arranged sutures, and nearer their extremities they bifurcate once or twice.

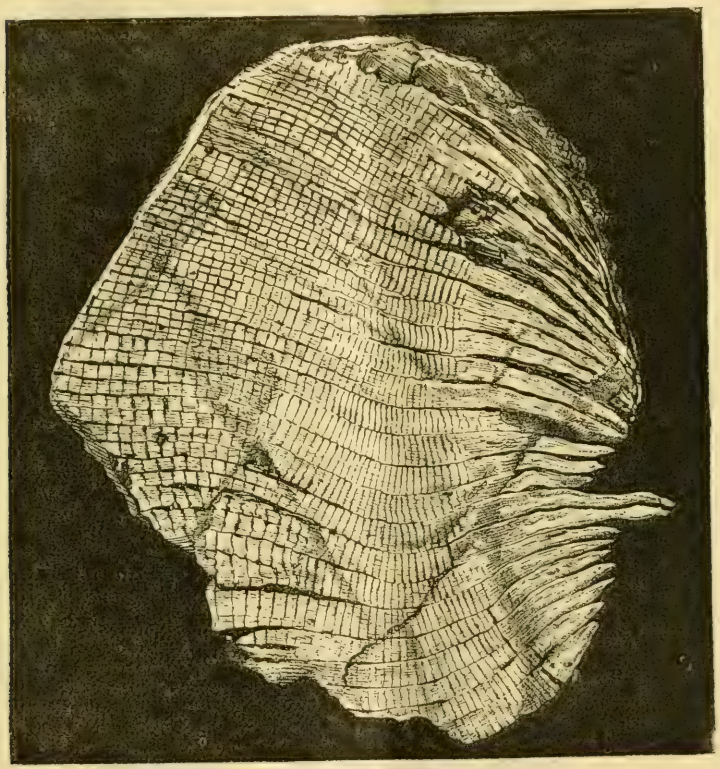

Fig. 6. Caudal fin-rays of *Gyrosteus mirabilis*; one-third natural size.

No scales or dermal plates are known, and the body was thus probably naked, as proved to be in *Chondrosteus*. Indeed, the oblong scales found to invest the unsymmetrical upper lobe of the tail in all known Sturgeons, recent and fossil, have not yet been recognised; but the upper margin of the tail is bordered in the usual manner by a row of great saddle-shaped, imbricating scutes—a feature well shown in the restoration of *Chondrosteus* (fig. 7).

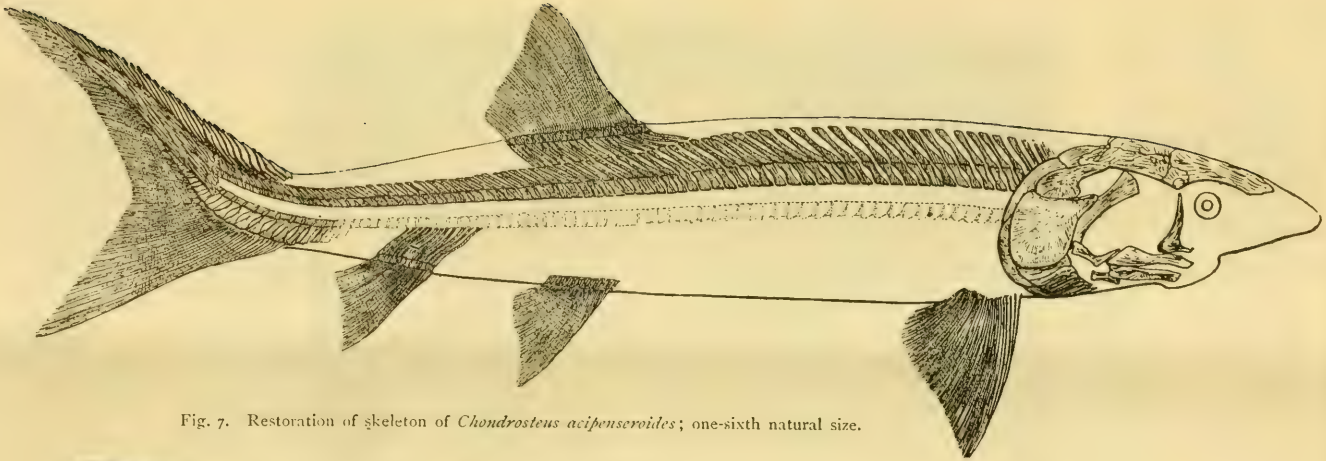

Fig. 7. Restoration of skeleton of *Chondrosteus acipenseroides*; one-sixth natural size.

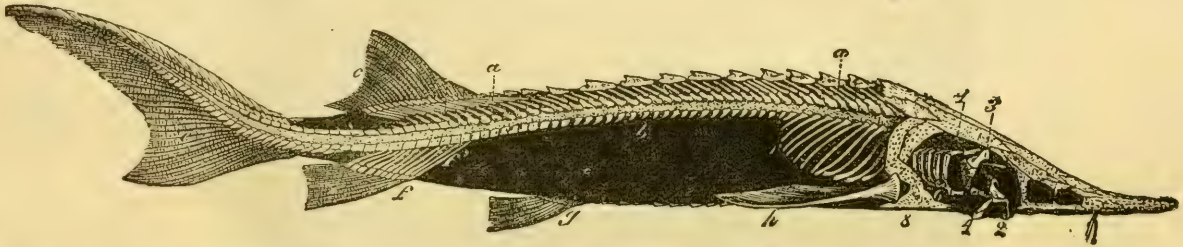

Fig. 8. Skeleton of Sturgeon (*Acipenser*). 1, posterior end of cartilaginous cranium beneath the head-plates; 2, upper jaw; 3, hyomandibular bone; 4, lower jaw; 5, gill-arches; 8, pectoral arch; *a*, neural arches and spines; *b*, hæmal arches; *c*, dorsal fin; *e*, caudal fin; *f*, anal fin; *g*, pair of pelvic fins; *h*, pair of pectoral fins; *r*, ribs.

Two small examples of this serried armour are preserved in Mr. Chadwick's collection at Malton; and there are a few scutes from a very large tail in the York Museum. The scutes are bilaterally symmetrical, flattened, and taper to an acute apex, the largest measuring about four or five inches from this point to the bifurcation of the base; they are destitute of an external layer of enamel, and the only traces of ornamentation are feeble rugæ upon the exposed sides.

Nothing is known of the external form and arrangement of the fins of *Gyrosteus*; but it is most probable that the entire fish had much resemblance to the well-known *Chondrosteus* (fig. 7), of which tolerably complete skeletons have been discovered. The typical species, *Gyrosteus mirabilis*, probably attained a length of six or seven metres, thus rivalling in size the most gigantic Sturgeon of the present day.

NOTES—BOTANY.

Sparganium ramosum Huds. var. **microcarpa** Neum.—On p. 200 of the 'Naturalist' (1888 Vol.) I announced the discovery in Yorkshire of this variety or form of the bur-reed under the name *microcarpum*. In the recent issue of C. J. och C. Hartman's 'Handbok i Skandinaviens Flora,' 12th ed. (first part only yet published), Neuman gives, on pp. 107-112, a masterly account of the genus *Sparganium*, and states that the name of this var. is *microcarpa*, and not *microcarpum*, as I previously gave it, hence I now correct the mistake. The plant has been found in Scotland, and it is put down in the Scandinavian Flora as occurring in Gotland and Medelpad, two provinces of Sweden. In going over this Flora, one is struck with the similarity of our own flora and that of Scandinavia, and thought goes back to the time when the configuration of the land surfaces of Europe was very different to those we at present know. Mr. Arthur Bennett, who reviewed the 'Flora of Scandinavia' in the 'Journal of Botany' for December 1889, informs me that my find near Dewsbury is the only record yet for Yorkshire of *Sparganium microcarpa*. As far as I know, it has not been observed anywhere else in England.—P. Fox Lee, Dewsbury, 19th March, 1890.

Ceterach officinarum in the East Riding of Yorkshire.—I have lately discovered this species growing on a wall in the village of Langton. It is growing in a truly wild condition, and thoroughly naturalized in its position. It is a rare plant generally in Yorkshire, and in Baker's 'North Yorkshire' it is stated to be growing upon a wall in Mr. Williams' yard at Appersett, in Wensleydale—sought for there recently, but without success. My friend, Dr. R. Spruce, of Coneysthorpe, however, informs me that at the time he investigated the botany of Upper Teesdale he met with it in several localities near the villages in the dale. This was in the summer of 1843. In Lees' 'Flora of West Yorkshire' it is given as 'native; on dry limestone rocks and walls, very rare.' It is, however, recorded in several places near Settle on the authority of Prof. L. C. Miall, also at the base of cliffs to east of Malham Tarn, stated to have been seen in this locality in 1880 and 1885 by Mr. P. F. Lee. The locality at Langton is thus far away, probably one hundred miles from the nearest place where it is now known to grow in Yorkshire, and therefore is a good record for the East Riding flora. This fern is more particularly a plant of the western English counties, and is found plentifully in the neighbourhood of Bristol. It is a valley plant, and is not found at high elevations, and seems to be very rare on the east side of the Pennine Chain of hills. There is some possibility of the plant having been introduced to the Langton locality. It is, however, thoroughly naturalised in its present site, and more information regarding its first appearance at Langton is desirable.—Matthew B. Slater, Malton, 21st March, 1890.

NOTES AND NEWS.

Recent elections to the Fellowship of the Zoological Society have included the name of Mr. Riley Fortune, of Harrogate.

The natural history publications of Mr. S. L. Mosley, F.E.S., whose writings are so well known, and whose work in Economic Entomology is so full of practical utility, have lately included the announcement of the commencement of a new work on British Butterflies, to be completed in twelve parts, and to include coloured figures of every species, engraved by the author and hand-coloured by his daughter. This will be actually commenced as soon as a hundred subscribers have given in their names, at a subscription price of ten shillings for the whole work.

Many years ago, Professor Ray Lankester, when reviewing Professor M'Intosh's great treatise upon the Nemerteans, which appeared in the Transactions of the Royal Society of Edinburgh, declared that the Society, by publishing such splendid researches, did more honour to itself than any it could confer upon the author. Once more the premier Society of the North has published a memoir ('On the Development and Life Histories of the Teleostean Food- and other Fishes,' by Professor W. C. M'Intosh, F.R.S., and Edwd. E. Prince, B.A., St. Andrews Marine Laboratory; Trans. Royal Soc. Edinb., vol. xxxv, part ii, No. 19) as voluminous and perhaps as exquisitely illustrated as its predecessor on the Nemerteans; but treating of the development of British Teleosteans, especially Food-Fishes. The work is one which will take a high rank in its department, and the fact that Mr. Prince, conjoint author with Professor M'Intosh, is a Yorkshireman, and was at one time an active naturalist in the West Riding, will lend additional interest to the treatise in the eyes of many readers of this journal. After perusing a copy of the memoir, received from one of the authors, we cannot but be of opinion that it is one which may be placed side by side with preceding works from the pen of the distinguished Professor of Natural History at St. Andrews. And that is high praise. Cunningham, Brook, and other English investigators, have issued brief papers on the embryology of Marine Osseous Fishes; but this is the first comprehensive study of an important subject which has been too long neglected. The present paper extends over 281 pp., and the plates number twenty-eight, all the figures on which, with the exception of one or two small sketches, are from the pencils of the two authors. Those acquainted with the elaborate papers of His, Hoffman, Lereboullet, Bambeke, List, and other foreign authors, will find that an English treatise upon the propagation, embryonic development, and larval life of British Teleosteans has now appeared not inferior in excellence and completeness to the splendid continental publications. Though consisting of thirteen sections, the memoir practically may be divided into three parts:—(1) a laborious account, very detailed, and largely microscopical, of the structure of the Teleostean ovum, the process of fertilisation, and the early stages of larval development; (2) a lengthy description of the advanced and post-larval stages, and (3) a concluding part in which the development of the Salmon is compared with that of a marine Teleostean, the Wolf-fish (*Anarrhichas*). The Wolf-fish was reared in the St. Andrews Marine Laboratory, from the egg, until the end of the sixth month, at the conclusion of which period the young fish exhibits all the features of the adult. This is really the first time, we believe, that a marine Osseous Fish (and *Anarrhichas* is an admirable food-fish, though little known as such) has been artificially reared through all its larval and post-larval life. Every page of the memoir embodies observations of deep scientific interest, and many intricate questions such as the nature of the periblast and its nuclei, the formation of the medullary canal in the neurochord, the existence of the neurenteric canal, and similar embryological points are fully detailed and illustrated by serial sections, and by drawings from life under high powers. Future workers upon the life-history of British Food-fishes, will look to this work as affording a basis for their researches, and it is certainly a splendid contribution to a department of knowledge which is now being recognised as of paramount importance, no less from its practical, than from its scientific bearings.

THE LAND AND FRESHWATER MOLLUSCA OF INGLETON, CLAPHAM, AND DISTRICT.

W. E. COLLINGE,

Leeds; Honorary Assistant Curator to the Conchological Society of Great Britain and Ireland.

The district round Ingleton and Clapham, which I have had numerous opportunities of examining, is one of great interest to the naturalist, and peculiarly favourable to molluscan life. Numerous papers dealing with the geology of this district having previously appeared from the pens of well-known geologists, I have not thought it necessary to preface this list with any remarks on the subject, it being sufficient to note that most of the species recorded have been taken on the Mountain Limestone.

Previous records have been published in Vol. V. of the 'Journal of Conchology,' by Mr. Hugh Richardson, p. 60; Mr. C. H. Pierson, p. 183; by myself, p. 197; and in Vol. VI, p. 40, by Mr. Edward Collier. Mr. Richardson's paper includes the records of Mr. J. R. Brockton Tomlin and Mrs. M. C. Hughes, and Mr. Collier's includes those of Messrs. C. Oldham and R. Standen; to the records of these conchologists, and other observations not my own, I have appended the names of the authorities.

To my friend Mr. W. Denison Roebuck, F.L.S., my thanks are due for having kindly placed at my disposal the records of the Conchological Society of Great Britain and Ireland, which include those of Mr. Wm. West, many of which are here published for the first time.

The ponds mentioned as 'ponds on Clapham Common' are four, situated about half-way across the Common, and about a mile and a half from Ingleton. I visited these ponds at Easter, 1883-4-7, and once or twice during 1885-6, when they swarmed with fine specimens of Sphæriidæ and Limnæidæ; visiting them, however, at Easter, 1888, I was very much surprised to find an entire absence of any specimens whatever, the reason of which was not far to seek, some enterprising person having erected, in close proximity, a wooden shed for the shelter of a large flock of fowls, geese and ducks, whose rapacious appetites could no doubt account for the disappearance of the shells.

The number of species enumerated in this list is 83, and 27 varieties.

April 1890.

Sphærium corneum L. Abundant, ponds on Clapham Common, Thornton Foss, Kingsdale, and Jenkin's Beck, a small brook running on the south-east side of Ingleton, joining the river at the west-south-west of the village. Lake marl, Crummockdale (H. Richardson).

Sphærium rivicola Leach. Common, found in most of the localities recorded for the preceding species.

Sphærium lacustre Müll. Ponds on Clapham Common.

Pisidium amnicum Müll. I have only met with this in the ponds on Clapham Common, my brother (H.H.C.) and I made a good search in the district in the early part of 1887 for members of this genus, and were rewarded by finding a few specimens in a small pond on the Common, near the second bridge on the road from Clapham to Ingleton, they were associated with the three species following.

Pisidium fontinale Drap. Few specimens in small pond on Clapham Common. Ingleborough (W. West).

Pisidium pusillum Gmelin. Few specimens in small pond on Clapham Common.

Pisidium nitidum Jenyns. Few specimens in small pond on Clapham Common.

Bythinia tentaculata L. Common. Kingsdale, Jenkin's Beck, etc.

Valvata piscinalis Müll. Ponds on Clapham Common. Lake marl, Crummockdale (H. Richardson).

Valvata cristata Müll. Ponds on Clapham Common. Lake marl, Crummockdale (H. Richardson).

Planorbis nitidus Müll. Brook near Clapham Station. Pond in field near Thornton Foss. Lake marl, Crummockdale, one specimen (J. R. B. Tomlin).

Planorbis nautileus L. My brother took specimens in 1883 which he labelled 'near Clapham'; he does not remember the precise locality.

Planorbis albus Müll. Brook near Clapham Station.

Planorbis parvus Say. Clapham (J. R. B. Tomlin).

Planorbis spirorbis Müll. Pond at Clapham, near the village. Jenkin's Beck.

Planorbis vortex L. Abundant in all the ponds on the Common.

Planorbis carinatus Müll. Common and generally distributed. Very small specimens in pond in fields near Pecca Falls.

Planorbis complanatus L. Common and generally distributed.

Planorbis corneus L. Not uncommon, but only small. Ponds on Clapham Common; brook near Clapham Station.

Planorbis contortus L. Common and generally distributed.

Physa hypnorum L. Ponds on Clapham Common. Not a common species.

Limnæa peregra Müll. Abundant and very fine, everywhere.

Limnæa auricularia L. Ponds on Clapham Common, only small specimens.

Limnæa stagnalis L. Not uncommon, and fairly distributed.

Limnæa palustris Müll. Ponds on Clapham Common. These specimens were the first Limnææ I observed to discharge a purple fluid when irritated, which they did frequently during the time I had them in my aquarium. Lake marl, Crummockdale (H. Richardson).

VAR. **albida** Nelson. Two specimens with type.

Limnæa truncatula Müll. Common everywhere.

Limnæa glabra Müll. Abundant in ponds on Clapham Common. Since I found this species exterminated from this locality I have had only one opportunity of working the district for freshwater molluscs, but much to my regret I was unable to discover a fresh locality. Should it be found again, I should be very pleased to hear of it.

Ancylus fluviatilis Müll. Common, ditch on the side of Ingleborough; rocky pools at Swilla Bottom.

Arion ater L. Abundant everywhere.

VAR. **brunnea** Roebuck. Sides of Ingleborough with type.

Arion hortensis Fér. Common everywhere.

Arion bourguignati Mabille. Common in Kingsdale (W. Denison Roebuck).

Limax maximus L. Generally distributed and fairly common.

Limax flavus L. Common.

Limax agrestis L. Abundant everywhere.

VAR. **albida** Picard. By Clapham Church-yard wall. (J. R. B. Tomlin).

Limax lævis Müll. One specimen in Kingsdale (J. R. B. Tomlin).

Amalia marginata. Sparingly met with, but of frequent occurrence (W. E. Collinge and J. R. B. Tomlin). Near Ingleton, Helks Wood, etc.

Succinea putris L. Common in suitable localities. Two specimens in Lake marl, Crummockdale (J. R. B. Tomlin).

Succinea elegans. 'One specimen only, on herbage in a wet ditch, Bentham Road, Ingleton' (E. Collier).

Vitrina pellucida Müll. Fairly common and generally distributed.

Zonites cellarius Müll. Abundant everywhere.

VAR. **albinos** Moq. Two specimens, Helks Wood, Ingleton (E. Collier).

Zonites alliarius Müll. Common throughout the district.

VAR. **viridula** Jeff. One immature specimen, Clapham (E. Collier).

Zonites glaber Studer. A few in Helks Wood, Ingleton, but not common (E. Collier).

Zonites nitidulus Drap. Generally distributed, but not abundant.

Zonites purus Alder. Rare. Near Ingleton and Clapham. Near Coombe Quarry, Ribblesdale (M. C. Hughes). A few in Helks Wood, Ingleton, also at Clapham (E. Collier).

Zonites radiatulus Alder. Helks Wood, Ingleton (W. West).

Zonites nitidus Müll. Not uncommon, but never in large numbers. Clapham. Sides of Ingleborough. Kingsdale. Hedge-bottoms on the Bentham Road.

Zonites excavatus Bean. Local. Base of old wall, Ingleton.

Zonites crystallinus. Common. Clapham Common, etc. Storr's Common, Ingleton (Robert Walker). Common in Helks Wood, Ingleton (W. West).

Zonites fulvus Müll. Fairly plentiful. Clapham. Helks Wood, Ingleton. Plentiful, Helks Wood (W. West). One in Kingsdale, one in Clapham Woods (J. R. B. Tomlin).

Helix lamellata Jeffreys. Common. Two specimens in Farrer's grounds, Clapham Common (J. R. B. Tomlin). Helks Wood, Ingleton (W. West).

Helix aculeata Müll. Ingleton (W. West). Clapham Common (J. R. B. Tomlin).

Helix aspersa Müll. Very common throughout the district.

VAR. **conoidea** Picard. Ingleton (E. Collier).

VAR. **undulata** Moq. Ingleton, with type (E. Collier).

Helix nemoralis L. Common and generally distributed.

VAR. **rubella** Moq. On the Bentham Road (E. Collier).

Helix hortensis Müll. Abundant.

VAR. **lutea.** Ingleton (E. Collier).

Helix arbustorum L. Common and generally distributed.

VAR. **alpestris** Zgl. Common in the lane near Ingleton Hall, and beautiful specimens (E. Collier).

VAR. **trochoidalis** Roff. Few very fine specimens in the lane near Ingleton Hall (E. Collier).

VAR. **marmorata** Roff. Three or four specimens in the lane near Ingleton Hall (E. Collier).

VAR. **flavescens** Moq. Ingleton, with type (E. Collier).

Helix rufescens Pennant. Abundant everywhere.

VAR. **alba** Moq. Neighbourhood of Clapham (J. R. B. Tomlin).

VAR. **rubens** Moq. Common with type.

Helix concinna Jeffreys. Common, foot of Ingleborough. Clapham, on the Bentham Road, near Pecca Falls.

Helix hispida L. Woods near Pecca Falls; hedge-bottoms on the Bentham Road.

VAR. **albida** Jeffreys. One specimen on an old wall, Beezley (C. Oldham).

Helix sericea Müll. Among some specimens collected near to Ingleton in 1885 by my friend Mr. R. Allsebrooke Hinds, I found a single specimen of this species. Ingleton (W. West).

Helix fusca Montagu. Helks Wood, Ingleton, a few specimens (W. West).

Helix virgata DaCosta. Local, pastures and old walls near Ingleton, specimens only small.

Helix caperata Montagu. Crina Bottom, Ingleborough (W. Denison Roebuck).

Helix ericetorum Müll. Storr's Common (E. Collier).

Helix rotundata Müll. Abundant throughout the district.

Helix rupestris Drap. Common on most old walls.

Helix pygmæa Drap. Ingleton, wood near waterfall (W. West). Helks Wood, Ingleton (E. Collier).

Helix pulchella Müll. Ingleton (W. West).

VAR. **costata** Müll. Moderately plentiful in Helks Wood, Ingleton (E. Collier).

Helix lapicida L. Few specimens at Clapham, rare.

Bulimus obscurus Müll. Not uncommon, sides of Ingleborough. Few in Helks Wood, Ingleton (E. Collier).

Pupa secale Drap. Common and generally distributed. Few dead specimens in Helks Wood, Ingleton (E. Collier).

VAR. **edentula** Taylor. Found in 1877 at the foot of the rocks near Ingleton (W. Denison Roebuck).

Pupa ringens Jeffreys. Slopes of Ingleborough (Wm. Nelson). Helks Wood, Ingleton, plentiful (W. West).

Pupa umbilicata Drap. Abundant, the most plentiful of any land shell I have met with in the district.

VAR. **curta** Pascal. Ingleton (E. Collier).

VAR. **albina** Moq. Kingsdale, one specimen (J. R. B. Tomlin).

Vertigo antivertigo Drap. Helks Wood, Ingleton, one specimen (W. West).

Vertigo pygmæa Drap. Two specimens near the lead-mines at the left of Ingleborough. Helks Wood, Ingleton (W. West); Clapham (J. R. B. Tomlin); Ingleton (R. Standen).

Vertigo pusilla Müll. To Mr. Wm. West is due the credit of being the first to find this shell in the district in 1882. Helks Wood, Ingleton (W. West). Clapham (W. West). Plentiful in Helks Wood (E. Collier).

Vertigo edentula Drap. Not uncommon. Helks Wood, Ingleton (W. West). Clapham and Kingsdale (J. R. B. Tomlin).

Balea perversa L. Common near Ingleton. Clapham, Kingsdale, Helks Wood, Ingleton.

Clausilia rugosa Drap. Abundant, and generally distributed.

VAR. **dubia** Drap. Common with type, on an old wall near Beezley Grange. Twistleton Scar End, Chapel-le-Dale (E. Collier). Mr. Collier says in his list—'I am inclined to think this a different species from *C. rugosa*.' It would be of interest if Mr. Collier would state his reasons, not that I at all doubt its right to specific distinction.

VAR. **gracilior** Jeffreys. Near Clapham Church, 1884 (C. H. Pierson).

VAR. **tumidula** Jeffreys. Clapham Woods, rare (J. R. B. Tomlin).

Clausilia laminata Mont. Clapham, Helks Wood, near Pecca Falls, etc.

Cochlicopa tridens Pult. Helks Wood, Ingleton. Clapham. Common near Helks Wood (W. West). Clapham Woods and in Kingsdale (J. R. B. Tomlin).

VAR. **crystallina** Dup. Two specimens in Helks Wood (R. Standen).

Cochlicopa lubrica Müll. Abundant; Ingleton, Clapham, Kingsdale, etc. Helks Wood, Ingleton (E. Collier).

VAR. **lubricoides** Fér. Few with type (E. Collier).

VAR. **ovata** Jeffreys. Few with type (R. Standen).

Carychium minimum Müll. Common, but requires looking for. Helks Wood, Ingleton, Clapham, etc. Clapham, common (W. West). Farrer's grounds, Clapham (E. Collier).

Acme lineata Drap. Slopes of Ingleborough (W. West). One specimen, Helks Wood, Ingleton (E. Collier).

VAR. **alba** Jeffreys. With type (W. West).

THE SHORELARK IN CUMBERLAND.

Rev. H. A. MACPHERSON, M.A., M.B.O.U., Etc.,
Author of the 'Visitation of Pallas's Sand-Grouse to Scotland,' etc.

The winter of 1889-90 has not been productive of many uncommon birds in the North West of England; and if I were willing to give a list of them, it would be a short one. One species, however, turned up in February, that rarely visits any portion of our West coast; I mean the Shorelark (*Otocorys alpestris*), so well known of late years as a visitor to the East coast of England. I had suggested (in the 'Birds of Cumberland') that the Shorelark would be detected some day 'on our salt-marshes'; and sure enough, the 1st of February, 1890, verified the prediction, for a party of three Shorelarks then appeared on the edge of a marsh that I often shoot over, and remained in the locality for several days, in fact, until shot; they proved to be in winter plumage, though one male showed much vinous colour. Among other localities visited by the Shorelark during the present winter, Dover may be instanced. The species indeed seems to occur there as regularly as on the Norfolk coast, hardly a season passing without one or more specimens being captured alive.

I find from my notebooks, that I have received several living Shorelarks from Dover at different periods. One of them I gave away to my friend, Mr. Young, F.L.S., who kept it in a cage with a number of other small birds, and found it an excellent addition to his aviary. Another, a female, that I kept in my own aviary, became very tame, in fact, quite reconciled to the loss of liberty, and used to sing a low and subdued song. This bird became pied in one moult. Ultimately I gave her away to another friend, Mr. H. D. Astley, F.Z.S. A third was a particularly vigorous male, and a very hearty songster. Like my other Shorelarks, he preferred to live chiefly on the ground, tripping over the gravel with light and dainty action. He took great pride in his pretty vinaceous plumage, and fairly delighted in a sand-bath. If alarmed, as by the approach of a stranger, he would fly up to a broad rail, and there remain perching until his solicitude was removed. The call-note used by this and other birds on most occasions, was a soft 'chee-chee,' but he had also a lively twitter and a pleasant song. In summer, our Shorelarks showed a partiality for insects, and would then eat mealworms, which they rejected during the winter months. I see from my notes, that a Shorelark shot by a quondam collector of mine near Rye on April 22nd, and sent to Mr. Aplin, contained the remains of

numerous small white worms, and small green coleopterous larvæ. The late Mr. R. Gray once wrote to me that some Shorelarks, which I had reported to him, shot on the Firth of Forth, contained only small seeds; so, birds shot at Spurn were recorded by Mr. Eagle Clarke to have subsisted, during the winter 1879-80, on the seeds of a marine plant. Mr. Aplin kindly sent me a Shorelark from the chief Norfolk haunt of the species, in November 1886, with the information that the number then present could not be estimated at less than one hundred birds.

NOTE—LEPIDOPTERA.

Pterophorus zophodactylus.—Dr. Ellis' note on *Pterophorus zophodactylus* (=*loewii*) in the concluding part of his 'Lepidopterous Fauna of Lancashire and Cheshire' ('Naturalist,' 1890, p. 85) is somewhat misleading. Since the specimen referred to was taken at Southport, the species has been taken in a number of localities in Britain, and is now scarcely considered even a rare British insect. It is recorded from two Yorkshire localities—Bramham, by J. Smith, and Sandburn, York, by William Prest (see 'List of Yorkshire Lepidoptera,' p. 175), though personally I have never met with it in our county. Most of my own series I bred from larvæ sent to me from near Dorchester, and which I fully described in the 'Entomologists' Monthly Magazine' of March 1884. Last season it occurred on a peculiar stretch of ground in a sort of valley on the sand-hills, two miles or so north of Hunstanton, where its ordinary food-plant, *Erythræa centaurea*, grew, as did also in some plenty its very pretty relative, *E. pulchella*, and on which *P. zophodactylus* is probably equally at home in its Norfolk habitat. —Geo. T. Porritt, Huddersfield, March 8th, 1890.

NOTE—BOTANY.

Alford Naturalists' Society.—The report of the secretary presented to the October (1889) Meeting, and printed, includes notes on the work of the summer season of 1889. On Saturday afternoon, the 6th of July, a joint excursion of the Grimsby, Alford, and Louth Naturalists' Societies was made to Mablethorpe. On and beside the sand-hills north of the Pull-over, 31 species of Phanerogams were observed in flower, besides eight plants which were not fully identified. The most noteworthy were the Asparagus (*Asparagus officinalis* Linn.) and the Wild Lettuce (*Lactuca virosa* Linn.). The Houndstongue (*Cynoglossum officinale* Linn.) and the Common Ragwort (*Senecio jacobæa* Linn.) were very plentiful, the latter being said to be very scarce in the Grimsby district. No specimen of *Eryngium maritimum* Linn. (the Sea Holly) was noticed, although at Spurn it quite carpets the ground and is found at most places on this coast. Mr. Altoft and the Secretary, on Wednesday, the 21st of August, went to Calceby; 62 species of Phanerogamous plants were observed in flower and duly recorded, the most interesting being the Wild Sage, Wild Thyme, Common Calamint, and the Marsh Cudweed (*Gnaphalium uliginosum* Linn.). On Wednesday, 11th September, Messrs. F. Altoft, J. W. Chandler, and the Secretary spent some time in the parishes of Ailby, Aby, and Belleau. The Wood Vetch (*Vicia sylvatica*) in Mother-Wood, Aby, and the *Saponaria officinalis* (the Soapwort) in Aby Village were pointed out by Mr. Chandler. Both these have been verified by Mr. F. Arnold Lees and the Rev. Wm. Fowler, M.A. The former plant is especially interesting, and they are both additions to the flora of the district. *Carduus acaulis* (the Stemless Thistle), first recorded for North Lincolnshire last year, has turned up in two places—about a mile and a half apart—in Well parish this year.—Joseph Burtt Davy, Hon. Secretary.

In Memoriam.

SAMUEL ARTHUR ADAMSON, F.G.S.

The subject of this memoir, whose early death after a brief illness caused surprise and grief to numbers throughout the county of York, was a son of the late Joseph Adamson, Gas Engineer. At a comparatively early age he obtained an appointment under the Leeds New Gas Company, and when that undertaking was acquired by the Leeds Corporation, his services were retained, and he became eventually chief clerk in the gas department.

The year 1874 witnessed the institution of the Yorkshire College in Leeds,—an institution which has proved of incalculable benefit to the county,—and young Adamson was only too delighted to indulge his geological proclivities by attending the lectures of Prof. A. H. Green, then attached to the College, and now Professor of Geology at Oxford. He was an apt pupil, and, under such a master, quickly picked up a good general knowledge of geology, and of the Coal Measures and other palæozoic rocks of the West Riding in particular. To the study of books he added, what is most essential, a practical acquaintance with the various strata in the field; with an observant eye, an attentive ear, and note-book in hand, he never missed an opportunity of accumulating fresh information during the many excursions which he attended. It was mainly owing to the admirable excursions organised by the Yorkshire Naturalists' Union that he gathered his intimate acquaintance with the secondary rocks of the East and North Ridings, under the leadership of the President of the Geological Section, with whom he was on the most cordial terms.

He had a retentive memory and a facile pen, and the interesting reports which he drew up, as Secretary both to the Leeds Geological Association and to the Geological Section of the Yorkshire Naturalists' Union, were always read with pleasure, and will often be recalled with regret that the hand that penned them can no longer contribute to the knowledge and enjoyment of those who mourn his loss.

Perhaps no geological publication of a similar nature was ever rendered so attractive as the Transactions of the Leeds Geological Association, edited by Mr. Adamson, combined with his reports of field excursions. It whetted the appetite, it encouraged the timid, and the result was a general increase of members, and a diffusion among them of the zeal which animated their honorary secretary, so that few scientific societies have in a short time attained so high distinction as the Leeds Geological Association.

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A similar tribute to his careful pains and power of description must be paid by the members of the Geological Section of the Yorkshire Naturalists' Union. Without his pen, the enjoyment of the excursion would have been confined to the twenty or thirty who participated in it, and the remembrance of the details would gradually have faded away; but his interesting narratives afforded pleasant reading to others as well, and still remain a storehouse of knowledge to refresh the memory of those who were his companions in the field.

But Mr. Adamson's labours were not confined to these narrow limits. His zeal knew no bounds. He threw himself heart and soul into the geological work of the British Association, and it was entirely owing to his energy and perseverance that such admirable reports were collected and presented to the Boulder Committee of the British Association, three years in succession, as to draw forth the remark from Dr. Crosskey, that 'the work of the Yorkshire Naturalists' Union in this direction was excellent and exhaustive, and an example to other counties.' He took up also warmly the idea of Geological Photography for registering and preserving a permanent record of rock-sections from time to time exposed, and of the changes in the aspect of nature, continually being brought about by marine or sub-aerial denudation, and it was through his instrumentality that a Committee of the Yorkshire Naturalists' Union was recently appointed to carry on this work in connection with one established by the British Association at Newcastle, in 1889.

In addition to the numerous papers which he contributed to the 'Naturalist,' 'Research,' and other periodicals, as also to the Transactions of the Leeds Geological Association, the Proceedings of the Yorkshire Geological Society, and Quarterly Journal of the London Geological Society, of which Society he was a Fellow, Mr. Adamson did important work in collecting, arranging, and making abstracts of papers and records, published from year to year, with respect to the natural history and physical features of the north of England, the result being contributed by him to the 'Naturalist,' under the head of 'Bibliography, Geology and Palæontology,' and calling forth special commendation from Professor Lebour at the Newcastle meeting above mentioned. These abstracts alone, published in the 'Naturalist' for December 1885, November and December 1886, and February and March 1889, and in the present number, show what important contributions Mr. Adamson himself has made to the study of Yorkshire Geology.

It only remains to add that he was looking forward with deep interest to the forthcoming meeting of the British Association at Leeds, where, amid the many celebrities gathered together, he would

have taken no unimportant place, when death from pleurisy deprived him of life, and the societies with which he was connected, of his valued services. He died on March 13th, 1890, in the flower of his age (44). His place will not easily be filled, if at all. His genial face, warm-hearted disposition, and kindliness of manner, combined with a singular modesty, can never be forgotten by those who knew and loved him for his own and his works' sake. Universally respected, his funeral was largely attended by his numerous private friends, and by his scientific and business colleagues, and it is already announced that steps will shortly be taken to find a fitting memorial to one who has emphatically deserved well of his county.—E. M. Cole.

JOSEPH EDWIN GARTSIDE.

It is with feelings of sorrow and regret that I have to record the sudden death, at the age of 59, of Mr. Joseph Edwin Gartside, of Elland, from apoplexy, on the 22nd February. He was a fair all-round naturalist and a good taxidermist, and possessed a collection of birds and birds' eggs. He was the founder of the Stainland Naturalists' Society, and several times its president. He was local secretary and caterer to the West Riding Consolidated Naturalists' Society when it held a meeting at his house, the Royal Oak Inn, Bur-Wood, on the 6th September, 1873, the occasion on which many of the members visited the beautiful grounds and aviaries belonging to the late Mr. Samuel Shaw, of Brooklands. Mr. Gartside's kind disposition and genial manner endeared him to a large circle of friends.—C. C. Hanson.

EDWARD BROOKE WRIGGLESWORTH.

In Mr. Wrigglesworth, who was born on the 16th March 1855, and died of consumption on the 21st of February, 1890, after a somewhat lingering indisposition, the Yorkshire Naturalists' Union loses a former office-bearer and the Wakefield Naturalists' Society a member to whom they owed much. At one time he occupied for some years the Secretaryship of the Entomological Section of the Union, his own special subject of research being the Order Coleoptera. A memorial of his services to the Society in his own native city exists in the form of the printed twelfth Report, issued in 1883, which contains numerous records, including a full list of Shells of the district, and less complete ones of Hymenopterous and Coleopterous Insects, Birds, and Mammals. He was the holder of an appointment in the rate-office of the Wakefield Corporation.

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JOHN GRASSHAM.

Mr. John Grassham—who was one of the oldest and most valued members of the Leeds Naturalists' Club, died on the 23rd February, after a very brief illness culminating in inflammation of the lungs. Born on the 9th November 1818, he had entered upon the 72nd year of his life. His natural history studies, though only begun in middle life, were ably and vigorously pursued, and he got together excellently arranged collections of lepidoptera and birds' eggs, besides numerous mounted examples of interesting birds, which will still be cherished by his family, one of whom at least inherits the paternal interest in the study. He became a member of the Leeds Naturalists' Club in 1872 and was for a long period one of its most active working members; he was seldom off the council, and often filled the office of vice-president. His kindly genial temperament endeared him to all who had the privilege of his acquaintance, not only among naturalists but in private life and among the Odd Fellows, with whom he long filled the office of Treasurer of his Lodge, and by whom his long and faithful services in that capacity were acknowledged by the presentation of his portrait and a time-piece. His stores of natural history information were of considerable interest and value, and although he published but little himself his knowledge was always freely at the service of his friends.—W. D. R.

NOTE—BIRDS.

Stone-Chat at Headingley, Leeds.—On February 24th I saw a Stone-Chat (*Pratincola rubicola*) near my house. This is the first time I have heard of the occurrence of this extremely local species so near Leeds.—H. Knight Horsfield.

NOTES—MAMMALIA.

Common Seal at Coatham.—A young Seal (*Phoca vitulina*) about three feet in length, was shot on Coatham Sands this morning, and exhibited in a tent at Redcar.—T. H. Nelson, Redcar, 5th March, 1890.

Badger in Lincolnshire. — On Saturday, the 15th of March, a Badger was found by John Allett, curled up asleep in a dry ditch in Gayton Fen. It crossed the river Eau into Withern Fen, and was finally taken near Strubby Church. It weighed 18 lbs. This on the information of Miss Susan Allett. James Eardley Mason, Alford, 24th March, 1890.

Otters in the North. — Northumberland: A fine dog Otter (*Lutra vulgaris*), 4 ft. 3 in. long, with a rare dapple coat, killed on the Reed near Corsenside, May 28th, 1886. One hunted on North Tyne above Wark, but not killed, May 30th, 1886. A dog Otter, 20½ lbs. in weight, killed on the Devil's Water near Corbridge, September 10th, 1889. A fine dog Otter, 24 lbs. in weight, killed on the Tyne near Chollerton, September 18th, 1888. Two others killed on the Tyne, 1889. **Cumberland:** A dog Otter, 21 lbs. in weight, was killed on the Irthing near Lanercost, August 25th, 1885. A dog Otter, 27 lbs. in weight, was killed on the Esk near Netherby, June 1888. **Durham:** Two Otters seen on the Wear near Cocken Dene, June 28th, 1887. Several seen near to Fatfield in 1887.—J. W. Fawcett, The Grange, Satley, Durham, Oct. 5th, 1889.

Naturalist,

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GEOLOGY AND PALÆONTOLOGY, 1888.

THE recent sudden death of Mr. S. A. Adamson, F.G.S., one of whose last pieces of work was the preparation for press of the present instalment of bibliography (the titles being supplied partly by himself and partly by Mr. A. Harker, M.A., F.G.S.), deprives the 'Naturalist' of an able and willing coadjutor, whose loss will be very much felt, and whose place will not easily be filled up.

The Editors will be glad if some of their geological readers would volunteer to assist Mr. Harker in future instalments by undertaking to furnish titles from such specified periodical literature as may be most convenient. Supposing a Manchester or Liverpool resident were to undertake to examine the Lancashire periodicals and literature, and some Yorkshire resident would undertake the same task for the periodicals of that county, the assistance would be most useful and acceptable.

ANON. [not signed]. **Cheshire.**

Local Museums, Chester [the collection of local Triassic rocks, arranged by A. Strahan, is very complete, and includes several fine slabs of *Cheirotherean* footprints from Storeton; the Carboniferous formation represented by some fine corals and coal-measure plants; the shells from the local drift deserve special mention]. Research, Aug. 1888, i. 18-20.

ANON. [not signed]. **Derbyshire.**

Scientific Aspects of Health Resorts: No. 2, Buxton [Section on Midland Railway between Buxton and Monsal Dale given, also another at Dove Holes; near Tideswell and at Barmoor 'ebbing and flowing wells' noted; at Castleton, three caverns mentioned where the mineral 'Blue John' is found; at 'Windy Knoll' Quarry bitumen (elaterite) and petroleum occur; account of Mam Tor or 'Shivering Mountain' added]. Research, Aug. 1888, i. 20-22, with views of Chee Tor, Chee Dale, and Mam Tor.

ANON [not signed]. **Yorkshire.**

[The Yorkshire Boulder Committee and its Work [a brief review of the work of the above committee, and suggestion for formation of a similar committee in Lancashire]. Research, Dec. 1888, i. 89-90.

ACKWORTH (BOYS') REPORTS. **York S.**

Fossils, *Lepidostrobus*, *Sphenopteris*, *Asterophyllites*—all from Snydale Colliery; *Axinus dubius*, *Bakevellia*, *Myalina*, and *Pleurotomaria antrina* from Went Cutting]. Nat. Hist. Journ., Oct. 15th, 1888, xii. 158.

S. A. ADAMSON. **York N.E.**

Visit of the Leeds Geological Association to Malton, on Easter Monday, April 11th, 1887 [detailed account of explorations at North Grimston and Settrington and about Malton]. Fourth Rep. Malton Nat. Soc., 1886-87 (pub. 1887), pp. 14-16.

S. A. ADAMSON. **York W.**

Notes on a Recent Discovery of Stigmaria ficoides at Clayton, Yorkshire [with place and circumstances of discovery and full details of dimensions]. Quart. Journ. Geol. Soc., 1888, xliv. 375-7; Abst. in Geol. Mag., 1888 (3), v. 285.

S. A. ADAMSON. **Yorkshire.**

The Yorkshire Boulder Committee and its First Year's Work [a sketch of the origin and history of the Committee, followed by details of first year's work, comprising seven reports and embracing boulders or groups of boulders in fifteen different localities]. Nat., Jan. 1888, pp. 17-24.

S. A. ADAMSON. **York S.W.**

The Yorkshire Naturalists' Union at Hatfield Chace [21st Sep., 1887; the drains and dykes of Hatfield Chace noted, and an account of 'warping' given; also section of gravel-pit near Lindholme, with varieties of rock composing the gravel; two erratic blocks at Lindholme Hall visited]. Nat., March 1888, pp. 87-88.

S. A. ADAMSON. **York N.W.**

The Yorkshire Naturalists' Union in Lower Wensleydale [at Leyburn, 21st May, 1888; section at the Keld Head Lead Mines given, the 'Lady Algitha' Cave visited and briefly described; also the 'Black Flags' Quarry and the Harmby Limestone Quarries; glaciated surface of limestone in the Leyburn Station-yard noted]. Nat., June 1888, pp. 173-177; Trans. Leeds Geol. Assoc., 1888, Part ix., pp. 211-212.

S. A. ADAMSON. **York S.W.**

Yorkshire and Lancashire Naturalists at Saddleworth [June 16th, 1888; route from Diggle Station over Harrop Edge into Castleshaw Valley, and its physical geology described; Millstone Edge ascended to inspect the Cudworth Quarries of Kinderscout Grit; section from Pule Hill to this point quoted, giving beds from Rough Rock to Kinderscout Grit; Mr. Watts' specimens taken from erratic blocks upon the drainage area of the Oldham Waterworks visited and examined; section at Lower Castleshaw excavated to make the puddle trench given; a Trap erratic noted and measured]. Nat., July 1888, pp. 214-216; Trans. Leeds Geol. Assoc., 1888, Part iv. pp. 215-219.

[S. A.] ADAMSON. **York N.E.**

The Yorkshire Naturalists' Union at Robin Hood's Bay [16th July, 1888: the Crag Hall Quarry at the Peak visited; section—the Lower Estuarine shales and sandstones resting upon the Dogger series, which again rest upon the alum shales or 'Communis' beds of the Upper Lias—the 'Striatulus' beds are wanting in this quarry.] Nat., Aug. 1888, pp. 240-242; Trans. Leeds Geol. Assoc. 1888, Part iv. pp. 224-226.

S. A. ADAMSON. **York W.**

Calverley Wood Quarries, Leeds [Sections of Rough Rock in these quarries described; faults and slight contortions of strata noted]. Nat., Sept. 1888, p. 276; Trans. Leeds. Geol. Assoc. 1888, Part iv. pp. 227-228.

[S. A. ADAMSON]. **York E.**

The Yorkshire Naturalists' Union at Market Weighton [6th Aug., 1888; on the Beverley line a section of the zone of *Ammonites angulatus*, Lower Lias, examined; on the new railway from Market Weighton to Driffield a magnificent section in the Middle Chalk traversed and described; outcrops of the Lower Lias in Londesborough Park noted]. Nat., Sep. 1888, pp. 280-282; Trans. Leeds Geol. Assoc. 1888, Part iv. pp. 227-230.

S. A. ADAMSON. **York W.**

Glacier Work in Airedale [a quarry in the Rough Rock at Greengates, Apperley Rock visited; the rock is capped by about six feet of very stiff and tough yellow Boulder Clay, full of rounded and sub-angular blocks of gannister and other local sandstones, with fragments of coal and shale; the bared surface of the Rough Rock was polished and engraved with well defined striæ and groovings running N.W. and S.E.; the quarry is about 300 ft. above sea-level, and at present is the furthest point down the Aire Valley where such an observation has been noted and recorded]. Nat., Oct. 1888, p. 297; Trans. Leeds Geol. Assoc. 1888, Part iv. pp. 230-231.

S. A. ADAMSON. **York E.**

Excursion, Hull and Barnsley Railway, South Cave and District [the line traversed from Weedley to North Cave and sections en route described, viz., Grey Chalk, Red Chalk, Oxford Clay, Kellaways Rock, Millepore Beds, Middle and Lower Lias]. Trans. Leeds Geol. Assoc. 1888, Part iv. pp. 207-209.

S. A. ADAMSON. **York W.**

Excursion, Knaresborough and Plompton [beneath Knaresborough Castle, the Lower Magnesian Limestone noted resting unconformably on the Third Grits; the noted Plompton Rocks visited and described]. Trans. Leeds Geol. Assoc. 1888, Part iv. pp. 209-211.

S. A. ADAMSON. **York W.**

Excursion to the Meanwood Valley [Elland Flagstone, shales and gannister beds beneath visited and described, also Meanwood Quarries where Rough Rock is worked]. Trans. Leeds Geol. Assoc., 1888, Part iv. pp. 213-215.

S. A. ADAMSON. **York W.**

Excursion, Knaresbro' to Nidd Bridge [Middle Marls and Lower Magnesian Limestone resting upon Third Grits; denudation by river Nidd noted and described; axis of Harrogate anticlinal crossed over]. Trans. Leeds Geol. Assoc., 1888, Part iv. pp. 219-221.

S. A. ADAMSON. **York S.**

Excursion, Beeston and Batley Railway [Geology traversed in lower part of Middle Coal Measures, from Middleton Main Coal upwards to Haigh Moor Coal, or a vertical section of about 200 yards; various sections noted and measured]. Trans. Leeds Geol. Assoc., 1888, Part iv. pp. 221-224.

S. A. ADAMSON. **York.**

J. E. Bedford, F.G.S. [biographical sketch of President of Leeds Geological Association]. Trans. Leeds Geol. Assoc., 1888, Part iv. p. 232, with portrait.

S. A. ADAMSON. **York.**

The Yorkshire Boulder Committee and its Second Year's Work [an account of the second year's work followed by details of the erratics reported to and approved of by the Committee]. Nat., Nov. 1888, pp. 332-348.

M. J. B. BADDELEY. **Lake District.**

The English Lake District; 4th ed. revised [a guide-book with descriptions of physical features, and fourteen tinted contour-maps by J. Bartholomew]. xxx. and 216 pp.; London; 1886.

J. G. BAKER. **York N.**

North Yorkshire: Studies of its Botany, Geology, Climate, and Physical Geography; 2nd ed. [opening part, including Geology, pp. 5-45, revised by Messrs. J. E. Clark and H. M. Platnauer; with coloured geological map of the North Riding]. Trans. Yorks. Nat. Union, Part 11 for 1885; Leeds, 1888.

ROBERT R. BALDERSTON. **York W.**

Evidences of Glacial Action near Ingleton [valleys of Greta, Twiss, and Doe examined; description of boulders principally observed; Yoredale Grits, Yoredale Black Marble, Productus Limestone, Crinoidal Limestone, Upper and Lower Mountain Limestone, 'Calliard,' Green Porphyry, Micaceous Trap, Silver-grey Trap, Coniston Limestone, Silurian Conglomerate]. Nat., July 1888, pp. 189-193.

ROBERT R. BALDERSTON. **York W.**

The Evidences of Glacial Action near Ingleton [further notes on the former article bearing that name, which see]. Nat., Aug. 1888, p. 234.

G. BARROW. **York N.**

The Geology of North Cleveland. Mem. Geol. Surv., England and Wales (Explanation of Quarter-sheets 104 S.W., and S.E.) [describes the Trias and Rhætic rocks, seen only in a single outcrop; the Lias, so magnificently

exhibited in the coast sections; the Lower Oolites, which form the high moors; the Kellaways Rock, the highest member exposed in the district; the Cleveland Dyke; and the Glacial and Post-Glacial deposits. A chapter is devoted to physical structure, faults, etc.; another to economic products, including the celebrated Cleveland ironstone; there is also an appendix giving the bibliography]. 8vo., 101 pp., London, 1888. [Reviewed, Geol. Mag., Dec. 1888, dec. iii. vol. v. pp. 569-570].

H. C. Beasley. **Cheshire.**

On a Section of Upper Keuper at Oxton [stating that the red marl there seen is not in situ]. Proc. Liverp. Geol. Soc., 1886, v. 134-136.

H. C. Beasley. **Lancashire and Cheshire.**

Some Instances of Horizontally Slickensided Joints [following described: in quarry at Wallasey, four parallel joints running E. and W., and a fifth crossing them in a direction 20° N. of W.; at Poulton, half-mile S. of above, and in same beds, lowest part of Keuper Sandstone, several joints at varying angles from 20° S. of W. to 25° N. of W.; on north side of Howbeck Road, Birkenhead, a joint 30° W. of N. traceable across the quarry; on Bidston Hill, at a point in cutting close to windmill, an indistinctly striated joint about 20° N. of W.; at Brandreth Delph, Parbold, Millstone Grit, two sets of joints at right angles]. Proc. Liverpool Geol. Soc., 1887, v. 246.

Henry C. Beasley. **Cheshire.**

Report of Field Meeting at Bidston Hill [a road has exposed a continuous section of Keuper Sandstone, of which the hill is composed; at Flaybrick Hill, a section of Upper Bunter overlain by a conglomerate, the latter being the base of the Keuper]. Proc. Liverpool Geol. Soc., 1887, v. 290.

H. C. Beasley. **Cheshire.**

Some Irregularly Striated Joints in the Keuper Sandstone of Lingdale Quarry [measured details of a series of slickensided faces exposed on the W. side of the quarry, showing striations in varying directions within a very short distance of each other; plan and section given]. Proc. Liverpool Geol. Soc., 1888, v. 386-388.

H. C. Beasley. **Cheshire.**

Report of Field Meeting at Wallasey [four or five parallel joints pointed out having an E. and W. direction, distinctly slickensided and striated horizontally, and in some instances traceable for a considerable distance, whilst they were crossed diagonally by a similar joint exposed on both sides of the quarry; a bed of conglomerate and another of grey shale, much disturbed, noted]. Proc. Liverpool Geol. Soc. 1888, v. 389.

J. E. Bedford. **Isle of Man.**

Notes on the Isle of Man [after brief mention of geological features at Port Soderick and Port Erin, visit to Stack of Scarlett and 'Chasms' described; near Peel are found a great number of flint flake implements; details of section given from which they were obtained]. Trans. Leeds Geol. Assoc., 1888. Part iv. pp. 177-179.

W. J. Bird. **Durham.**

The South Durham Salt Bed and Associated Strata [strata thus classified; (1) Surface Deposits; (2) Upper Gypseous Marls; (3) Red Sandstones and Marls; (4) Lower Gypseous Marls; (5) Saliferous Beds (Anhydrite, Salt, etc.); (6) Magnesian Limestone; details given of twenty-three borings through above]. Trans. Manchester Geol. Soc., vol. xix. 564-584, with sections and tables.

J. F. Blake. **York N.E.**

On a Star-fish from the Yorkshire Lias [a *Solaster* from Huntcliff]. Rep. Brit. Assoc. for 1887, p. 716; see also Nature, 1887, vol. xxxvi, p. 591.

Herbert Bolton. **Lancashire.**

Observations on Boulders from the High-level Drift of Bacup [rock specimens obtained from drift described in detail and altitudes given; concludes the presence of three well-defined beds of Glacial Drift in the Bacup

area; No. 1, a stiff blue clay of great thickness; No. 2, a bed of angular Drift Sand, about 20 ft. in thickness; No. 3, a bed of variously coloured clay, varying considerably in thickness, and containing a great number of foreign boulders of granite, felstone, volcanic ash, etc., from the Lake district]. Trans. Manchester Geol. Soc. xix. 393-404.

W. MILBURN BRIGGS. **Cumberland.**

Micro-Petrology: a note on the Felsite Group [an extract or quotation from Rosenbusch's great work]. Wesley Nat., April 1888, ii, 57-58.

CHARLES BROWNRIDGE. **York W.**

Interesting Discovery of Boulders in the Coal Measures at Wortley, near Leeds [obtained in the 'Black Bed' pit of Messrs. Ingham & Sons; four described—the largest a coarse gritstone embedded in the 'bind' or clayey shales overlying the coal; the three smallest quartzites embedded in the 'Black bed' coal itself; analysis of the quartzites by Prof. Bonney, F.R.S., given]. Nat., Feb. 1888, pp. 49-51.

C. BROWNRIDGE. **York S.**

The Lindholme Boulders [details of two boulders on the west front of Lindholme Hall, near Hatfield; Halleflinta and Coarse Gritstone]. Nat., Nov. 1888, p. 347.

G. W. BULMAN. **Durham, York E., Cumberland.**

The Influence of Geology on Population [written to show that geology has had some share in deciding the areas to be occupied by the various settlers in Britain; thus comparisons are drawn between the geology of Denmark and that of the part of England where the Danes settled; also between the rocky and deeply-indented coast of Norway and that of the west coast of Scotland; further refers to the fact that the geology of Wales and Cornwall by its mountainous character preserved the Celtic race in England from extinction]. Sci. Goss., Aug. 1888, pp. 177-179.

A. CARNOT. **Lancashire and Northumberland.**

Sur . . . le phosphore dans la houille . . . [pointing out the presence of phosphorus in coal, and especially in the spores; coal from Lancashire contained 0·02852 per cent., Wigan 0·02246, Newcastle a trace only]. Bull. Soc. Chim. Paris, vol. xliii. pp. 63-66.

W. D. CARR. **Lincolnshire.**

Erratic Boulders [recording a large boulder of Lincolnshire Oolite which is quarried at Marston, five miles west of Ancaster, where is the nearest outcrop of that rock]. Geol. Mag., Feb. 1888, dec. iii. vol. v. p. 96.

S. CHADWICK. **York N.E.**

Geological [Report, for year 1885-86; giving lists of local fossils from the chalk and the coralline oolite of North and East Yorkshire]. Third Ann. Rep. Malton Field Nat. and Sci. Society, 1885-86 (pub. 1886), pp. 5-8.

S. CHADWICK. **York N. and E.**

Geology [being report on investigations made by Malton members during 1886; several species of fossils mentioned]. Fourth Rep. Malton F. Nat. and Sci. Soc., 1886-7 (pub. 1887), pp. 24-25.

S. CHADWICK. **York S.E.**

Ancient and Modern: or, Scenes in the History of a Glacial Pebble [a fine specimen of an ancient British stone hammer, made out of a piece of Dark Blue Whinstone (probably an old glacial pebble from the coast); now deposited in the Malton Museum]. Nat., Feb. 1888, p. 51.

SAMUEL CHADWICK. **Yorkshire.**

[Reports upon Erratics in North and East Ridings of Yorkshire; details of erratics at Cropton near Pickering, Neswick near Driffield, Grosmont near Whitby, Sleights near Whitby, Kirby Underdale, Speeton near Filey, Hunmanby, Reighton, Cayton near Scarborough, Lebberston near Scarborough, Filey, and Seamer]. Nat., Nov. 1888, pp. 335-343.

WM. CHEETHAM. **York N.W.**

From the Millstone Grits to the Silurians [description of a tour by road from Horsforth, viâ Ilkley, Burnsall, Grassington, Arncliffe, into Ribblesdale; thence returning via Stainforth, Giggleswick, Gargrave, Skipton, and Otley; principal geological features mentioned]. Trans. Leeds Geol. Assoc., 1888, Part iv. pp. 194-204.

D. C[LAGUE]. **Lancashire.**

Notes of the Month [account of excavation made at north end of Hope Street, Liverpool, showing a soft sandstone belonging to the Upper Bunter]. Trans. Liverpool Geol. Assoc., 1886-7, vii. 53.

E. MAULE COLE. **Yorkshire.**

Notes on Flamborough Head Boulders [erratic blocks on Beacon Hill, Thornwick Bay, and Bempton briefly described; Granite, Whinstone, Sandstone, and Mica Schist]. Nat., Jan. 1888, p. 19.

E. MAULE COLE. **York S.E.**

The Rudstone [details of the great monolith at Rudston near Bridlington; it is a grit similar to that of the Lower Oolite found on the watershed of the North Eastern moorlands; author suggests that it is a bloc perché, and brings evidence to support his theory; derivation of word 'Rudstone' given at length]. Nat., March 1888, pp. 81-82.

E. MAULE COLE. **Yorkshire.**

[Reports upon Erratics in North and East Ridings of Yorkshire; details of erratics at Stillington near Easingwold, Gristhorpe near Filey, Carr Naze, Filey Brigg, Muston near Filey, Bempton, and Buckton]. Nat., Nov. 1888, pp. 333-335.

E. MAULE COLE. **Lancashire.**

A Lake-Dwelling in Lancashire [details of a section, 30 ft. deep, exposed in works for diverting course of Ribble, at Preston, and constructing docks; in the area of the unfinished dock have been found 52 pairs of antlers of red deer, 43 heads of Urus, 14 human skulls, two ancient canoes hollowed out of the trunks of trees, and a bronze spear-head, but no flint or pottery; in the gravel-beds are piles standing vertically, and driven in to a depth of from 8 ft. to 15 ft., and near the top a quantity of brushwood had been laid horizontally between the piles, so as to make a solid and firm floor]. Yorks. Geol. and Polyt. Soc., vol. xi. part i. pp. 90-91; Nat., Dec. 1888, p. 360.

HENRY COWBURN. **Lancashire.**

Boulders in Coal Seams [brief description of two hard fine sandstone boulders found in the coal about six inches from the bottom of the seam in the Five Feet Mine at Brookside Colliery, Leigh]. Trans. Manch. Geol. Soc., vol. xix. part 16, pp. 404-405.

H. W. CROSSKEY. **Yorkshire.**

Note upon the Hitchingstone, Keighley Moor [its claim to be considered an erratic block finally negatived]. Nat., Jan. 1888, pp. 23-24.

H. W. CROSSKEY. **Durham, Yorkshire, and Lancashire.**

[Erratic Blocks, being the] Fifteenth Report of the Committee, consisting of . . [eleven names] . . for . . recording the position, height above the sea, lithological characters, size, and origin of the Erratic Blocks of England, Wales, and Ireland, reporting other matters of interest connected with the same, and taking measures for their preservation [the reports are obtained chiefly through the Yorkshire Boulder Committee; they include Bulmer's Stone at Darlington, and the Sadberge Stone; blocks at Northallerton, chiefly from the Cheviots and Scotland; boulders on the Yorkshire coast—the Hitchingstone near Keighley, and the boulders from the base of the Carboniferous at Norber and Malham; also some detailed notes by Rev. John Hawell of the erratics in his parish of Ingleby Greenhow, and notes by R. H. Tiddeman on the distribution of boulders from the base of the carboniferous series at Norber and Malham Tarn]. 57th Rep. Brit. Assoc., Manchester, 1887 (pub. 1888), pp. 236-244; see also Nat.

J. W. Davis. **Yorkshire.**

On the Discovery and Excavation of an Ancient Sea-beach, near Bridlington Quay, containing Mammalian Remains [details of the ancient cliff and sea-beach north of Bridlington Quay]. Rep. Brit. Assoc. for 1887, pp. 694-696.

J. W. Davis. **York W.**

The Norber Group of Boulders [notes upon the Silurian Grit Boulders resting upon Mountain Limestone at Norber near Clapham; bibliography of this group appended]. Nat., Nov. 1888, pp. 346, 347.

C. Davison. **Cumberland.**

Note on the Movement of Scree-Material [with reference to the manner of 'creeping' of the screes of slate on Hindscarth]. Quart. Journ. Geol. Soc., vol. xliv. pp. 232-237; abstract in Geol. Mag. (3), vol. v. p. 181; Phil. Mag., April (5), vol. xxv. pp. 320, 321.

W. B. Dawkins. **'Pennine Chain.'**

On the Structure of the Millstone Grit of the Pennine Chain [derived from granites and schists with garnets]. Rep. Brit. Assoc. for 1887, p. 686.

W. B. Dawkins. **Isle of Man.**

On the Phyllites of the Isle of Man [describes peculiarities of cleavage in the slates of the Isle of Man]. Rep. Brit. Assoc. for 1887, p. 700.

[Sir] Wm. Dawson. **Cumberland.**

[Buthostrephis harknessii Nich. and **B. radiata** Nich., **from the Skiddaw rocks** of Cumberland are the oldest plants known to him; he is inclined to consider both to be parts of one plant, for which he proposes the generic name *Protannularia*]. Pop. Sci. Monthly (New York), April 1888, p. 790 and fig. 1.

R. M. Deeley. **Lincolnshire.**

Correlation of the Lincolnshire Pleistocene Deposits with those of the Midland Counties [the author's Older Pleistocene is scarcely represented in Lincolnshire; his Middle and Newer Pleistocene correspond to the Older and Newer Boulder Clay of Jukes-Browne]. Geol. Mag., April 1888 dec. iii. vol. v. pp. 153-155.

C. E. DeRance. **Cheshire, Cumberland, Lancashire, Yorkshire.**

Notes on the Vale of Clwyd Caves [before describing the above caves, the evidence obtained of deposits in the above counties from the commencement of the glacial conditions to the present time is reviewed; section at the Victoria Cave, Settle, given]. Proc. Yorks. Geol. and Poly. Soc., Part i. vol. xi. pp. 1-20.

C. E. DeRance. **Lancashire, Lincolnshire, Cheshire.**

[Underground Waters, being the] Thirteenth Report of the Committee, consisting of . . [18 names] . . for . . . investigating the Circulation of Underground Waters in the Permeable Formations of England and Wales, and the Quantity and Character of the Water Supplied to various Towns and Districts from these Formations [details given of wells and boreholes at Gainsborough, Lincs., at Capenhurst, Cheshire, Manchester, Penwortham near Preston, Bury Railway Station, Withnell Moor, and Walton-le-Dale; and the Report concludes with a most valuable 'Chronological List of Works referring to Underground Water, England and Wales,' by W. Whitaker; 556 titles given]. 57th Rep. Brit. Assoc. (Manchester, 1887), 1888, 358-414.

E. Dickson. **Lancashire.**

Notes on the Excavations for the Preston Docks [describing the Boulder Clays and Sands, and the Pebble-beds of the Bunter, and giving lists of the bones and the shells found]. Proc. Liverp. Geol. Soc., vol. v. (1887), 249-256.

E. Dickson. **Lancashire.**

Geological Notes on the Preston Dock Works and Ribble Development Scheme [supplementary to the above paper, and giving a folding section]. Proc. Liverp. Geol. Soc., vol. v. (1888), 369-376.

D. Embleton. **Durham and York N.W.**

A Catalogue of the Place-names in Teesdale [with many references to the physical features]. Nat. Hist. Trans. Northumb., Durham, and Newc.-on-Tyne, vol. ix. (1888), pp. 1-223.

L. Fletcher. **Yorkshire.**

An Introduction to the Study of Meteorites [with a list of those in the British Museum collection; includes the aërolites which fell at Wold Cottage, Thwing, in 1795 (pp. 22, 73), and at Pennyman's Siding, Middlesbrough, in 1881 (pp. 26, 80, 85)]. 92 pp., 8vo., London, 1888.

C. Fox-Strangways and G. W. Lamplugh. **Yorkshire.**

La Géologie du l'Est du Yorkshire [prepared for the excursion of the London Geological Congress; the former author gives an account of the Jurassic rocks of East Yorkshire; the latter a description of the Cretaceous and Glacial deposits near Bridlington; there are also a bibliography and a coloured map]. Congrès Géologique International, 4me Session, Explications des Excursions, pp. 131-175.

W. Garnett. **Durham.**

Report of the Committee appointed to inquire into the Observations of Earth-tremors . . . [giving record of tremors observed at Marsden, and pointing out their probable connection with earth-quakes in various parts of the globe]. Trans. North of Eng. Inst. Mining and Mech. Eng., xxxvii. 55-57.

S. Gasking. **Lancashire.**

Report of Field Meeting at St. Helens [Cowley Hill Quarry and Middlehurst's Quarry in the Lower Coal Measures visited, and in the Middle Coal Measures, Doulton's Delph, were Stigmaria and Dadoxylon were seen in situ]. Trans. Liverp. Geol. Assoc., 1886-7, vol. vii. p. 55.

S. Gasking. **Lancashire.**

Report of Field Meeting at St. Helens [recording numerous Coal-Measure plants at an excavation at Cropper's Hill known as Doulton's Delph]. Proc. Liverp. Geol. Soc., vol. v. 1888, p. 391.

A. Geikie. **North of England.**

The History of Volcanic Action during the Tertiary Period in the British Isles [many of the great dykes of basic rocks in the North of England are held by the author to have been the channels of extensive fissure eruptions in Tertiary times; the basaltic lavas have since been removed by denudation, except in Antrim and the Inner Hebrides; the Cleveland Dyke runs from near Whitby to near Carlisle (110 miles), and perhaps 80 miles farther, into Ayrshire (pp. 49, 50)]. Trans. Roy. Soc. Edinb., vol. xxxv. pp. 21-184, with plates i. and ii. (1888).

Isaac E. George. **Lancashire and Cheshire.**

Wind Erosion [or Æolian action stated to be one of the potent forces of denudation; the structure of sand grains described and their connection with the origin of some of the Triassic sandstones alluded to]. Trans. Liverp. Geol. Assoc., 1886-7, vol. vii. pp. 36-39.

I. E. George. **Derbyshire.**

Bank Holiday Trip to Castleton [Windy Knoll Quarry visited, and specimens of elaterite obtained; the gorge of the Winnatts traversed, and its origin suggested, the Cave Dale basalt thought to be intrusive, in one place developing a rude columnar structure vertically]. Trans. Liverp. Geol. Assoc., vii. 1886-7, 79-81.

I. E. G[eorge]. **Derbyshire.**

A Remarkable Valley [the origin of Cave Dale considered; a splendid example of denudation]. Trans. Liverp. Geol. Assoc., 1886-7, vii. 82-83.

W. Hodgson Gill. **Yorkshire.**

[Report upon Boulders at Filey and Hunmanby; details given of two boulders at Filey and one at Hunmanby]. Nat., Nov. 1888, pp. 346, 347.

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J. G. Goodchild. **Cheshire, Cumberland, and Westmorland.**

Some Observations upon the Natural History of Gypsum [its modes of occurrence and probable origin; considerable deposits occur about the horizon of the Magnesian Limestone in Cumberland and Westmorland, and in the Keuper Marls in Cheshire]. Proc. Geol. Assoc., vol. x. (1888), 425-445.

J. G. G[oodchild]. **Westmorland.**

Westmorland [an account of its geology, physical features, climate, and minerals]. Encyclopædia Britannica, 9th ed., vol. xxiv. (1888), pp. 513-515.

Wm. Gregson. **York N.E.**

[Reports upon Erratic Blocks in the North Riding of Yorkshire; details of erratic blocks at Cattersty Sands, Skinningrove, Whorlton, Baldersby Park, Elmire, Robin Hood's Bay, and Hutton Moor]. Nat., Jan. 1888, pp. 19, 20.

Wm. Gregson. **York N.E.**

[Boulders at Guisborough; details of two boulders in the Priory Grounds, Guisborough]. Nat., Nov. 1888, pp. 347, 348.

W. S. Gresley. **Derbyshire.**

The Occurrence of Variegated Coal-Measures, Altered Ironstones, etc., at Swadlincote, Derbyshire [describes a quarry-section showing Coal-Measures iron-stained by the overlying red Permian beds, and containing nodules of clay-ironstone converted into hæmatite]. Geol. Mag., March 1888, dec. iii. vol. v. pp. 115-117.

W. S. Gresley. **Northumb., Durham, and Yorkshire.**

[Letter on correlation of coal-seams in the North of England, in discussion of a paper by Mr. Walton Brown]. Trans. North of Eng. Inst. Mining and Mech. Eng., vol. xxxvii. pp. 123-125.

W. S. Gresley. **Lancs., Yorksh., Northumb., etc.**

On the occurrence of Boulders and Pebbles in the Coal Measures [describes many instances not only of boulders and pebbles found embedded in coal-seams and lying on the roof, but 'erratics' occurring in the floors or underclays of coal beds]. Trans. Manch. Geol. Soc., vol. xix. Part 18, pp. 488-504, with sections.

C. D. Hardcastle. **Yorkshire.**

The Greystone, Leeds [described; Millstone Grit; details of the block given, also a legend and historical facts connected with it]. Nat., Jan. 1888, 18-19.

Alfred Harker. **Cheviotland, Derbysh., Durham, Northumbld., Cumbld, Westmld., Furness, York N.W., York N.E., Isle of Man.**

The Igneous Dykes of the North of England [the striking phenomena of the igneous dykes of this country generally alluded to, and numerous localities given, with particular reference to the great augite-andesite dyke of Cleveland, known also as the Cockfield and the Armathwaite Dyke; it is suggested that igneous dykes should be formed into groups—firstly, those in connection with volcanic necks or plutonic bosses, commonly presenting a rough radial arrangement about their source; secondly, those injected during or closely subsequent to movements, etc., in the strata; and thirdly, those belonging to more extensive geological operations (fissure eruptions, etc.)]. Nat., Dec. 1888, pp. 349-353.

George F. Harris. **Westmorland.**

Granites and our Granite Industries [account given of the Shap Quarries; the stone is described as a porphyritic hornblendic granite]. Chap. v. Sec. A, Hornblendic Granites, pp. 53-54.

T. F. H[enderson]. **Yorkshire.**

York [a summary of the geology, physical features, minerals, etc., of the county]. Encycl. Brit., 9th ed., vol. xxiv. pp. 746-747, 1888.

W. HEWITT. **Lancashire.**

Notes on the Topography of Liverpool [referring to the water-supply, boulder-clays, and quarries]. Proc. Liverp. Geol. Soc., vol. v. pp. 145-150.

W. HEWITT. **Isle of Man.**

Notes on Glacial Deposits and Markings in the South of the Isle of Man [describing the till and the ice-scratches about Port Erin, Port St. Mary, and Castletown]. Proc. Liverp. Geol. Soc., 1888, vol. v. pp. 352-358.

W. HEWITT. **Cheshire.**

Report of Field Meeting at Runcorn [describing the Keuper beds there exposed]. Proc. Liverp. Geol. Soc., 1888, vol. v. p. 390.

W. HEWITT. **Lancashire.**

River Deposits in the Ribble Valley [a resumé of the papers by Mr. E. Dickson on the same subject]. Research, July 1888, pp. 9, 10.

W. HILL. **Lincolnshire and York S.E.**

On the Lower Beds of the Upper Cretaceous Series in Lincolnshire and Yorkshire [the Hunstanton Limestone is represented by the Red Chalk, with varying thickness up to 30 ft. at Speeton: the base of the Chalk Marl is marked by a bed of compact limestone equivalent to the 'sponge-bed'; the upper limit of the Chalk Marl is fixed by certain courses of grey chalk representing the Totternhoe Stone, with frequent red coloration in Lincolnshire]. Quart. Journ. Geol. Soc., vol. xliv. pp. 320-364; Abstract in Geol. Mag. (3), vol. v. pp. 234, 235; Phil. Mag., May (5), vol. xxv. pp. 445, 446.

BERNARD HOBSON. **Isle of Man.**

The Glaciation of the Isle of Man [draws attention to the glacial striæ on Carboniferous Limestone at Scarlett Point near Castletown, direction E. 35° N. and E. 37½° N.; at Port St. Mary, on the outer side of the shore end of the new concrete pier, average direction E. 33° N.; from the beds immediately overlying the limestone at Port St. Mary—a rounded and well-scratched boulder. The article is written in refutation of Mr. Keegan's article in Sci. Goss., April 1888, p. 73]. Sci. Goss., July 1888, pp. 165-166.

B. HOLGATE. **Yorkshire.**

The Magnesian Limestones of Yorkshire [after general remarks upon the Permian formation, localities are given; divisions of the Permian rocks of Yorkshire quoted; also their economic uses]. Trans. Leeds Geol. Assoc., 1888, Part iv. pp. 182-184.

B. HOLGATE. **Westmorland and Cumberland.**

Notes on the Lake District [visits to Castle Rigg near Keswick, the Glendaterra Pass near Skiddaw, and other places described; metamorphism of the Lake District rocks illustrated]. Trans. Leeds Geol. Assoc. 1888, Part iv. 204-206.

J. HORNELL. **Isle of Man.**

Ice-graving in the Isle of Man [a note on the glacial striations of the island, mentioning localities]. Sci. Goss., June 1888, pp. 140, 141.

W. H. HUDLESTON. **Lincolnshire and York E.**

A Monograph of the British Jurassic Gasteropoda. General introduction, pp. 1-15, and Part i. No. 1; Gasteropoda of the Inferior Oolite, pp. 17-56 [Inferior Oolite of England divided into four districts; No. 3, the East Midland, including Lincolnshire and South-East Yorkshire; No. 4, the Yorkshire Basin proper; comparison of Dorset and Yorkshire coasts, p. 35]. Palæontographical Society, vol. xl. (for 1886, pub. 1887). Part i. No. 2; Gasteropoda of the Inferior Oolite, pp. 57-136, plates i.-vi. [Lincolnshire Limestone described, pp. 71-73; the introductory portion of the monograph discusses the details of the Inferior Oolite in the East Midland district and the Yorkshire Basin, pp. 74-77; systematic part of work, which follows, describes many Yorkshire species]. Vol. xli. (for 1887, pub. 1888).

W. H. Hudleston. **Yorkshire and Lincolnshire.**

Report of Sub-Committee [on classification of Oolites; contains the author's arrangement of the Oolitic strata of Yorkshire, with their distribution, lithological characters, and characteristic fossils]. Congrès Géologique International; compte rendu, 3me session, pp. 457-483; Berlin, 1888.

T. McK. Hughes. **York E. and Cheshire.**

On the Drifts of the Vale of Clwyd and their Relation to the Caves and Cave-Deposits [discussing also the relations of the well-known 'Bridlington Crag' and the shell-bearing deposits at Kelsey Hill and Macclesfield, and giving full lists of the species recorded]. Quart. Journ. Geol. Soc., vol. xliii. pp. 73-115 [91-97], 1887.

O. W. Jeffs. **Lancashire.**

The Calday Grange Fault, West Kirby [describing the exposures and noting slickensides; with a plate]. Proc. Liverp. Geol. Soc., 1888, vol. v. 247-249.

O. W. Jeffs. **Lancashire.**

Report of Field-Meeting at Thurstaston and West Kirby [describing the Upper Bunter, etc.]. Proc. Liverp. Geol. Soc., 1888, vol. v. pp. 290, 291.

O. W. Jeffs. **Cheshire.**

Notes on the Occurrence of Copper in the Keuper Sandstone at the Peckforton Hills, Cheshire [with analyses by C. C. Moore]. Proc. Liverp. Geol. Soc., 1887, vol. v. pp. 139-144.

Edward Jones. **Yorkshire.**

On the recent Exploration of a Cave at Elbolton near Thorpe [the entrance to this cave is at the foot of a small scar on the south side of Elbolton, about 100 ft. from the summit; known in the neighbourhood as 'Knavvy Noddle Hole'; Whitaker (Hist. Craven) calls it 'Knave Hole'; has recently been explored by Craven Naturalists' Society; description of cave given, and the following animal remains reported to have been obtained: man, horse, ox, sheep, dog, fox, badger, pig, wild boar, red deer, rat, water rat, mouse, shrew, and three species of birds]. Proc. Yorks. Geol. and Pol. Soc., vol. xi. part 1, pp. 86-90.

T. Rupert Jones (Secretary). **York Mid W., Derbyshire.**

Fifth Report of the Committee, consisting of Mr. R. Etheridge, Dr. H. Woodward, and Professor T. Rupert Jones (Secretary), on the Fossil Phyllopoda of the Palæozoic Rocks, 1887 [*Dithyrocaris tenuistriata*, Mountain Limestone, Settle; *D. lateralis*, black bands over the main limestone of Derbyshire; *D. pholadomya*, in a dark micaceous sandstone of the Lower Carboniferous Limestone, Berwick-upon-Tweed, are noticed]. 57th Rep. Brit. Assoc., Manchester, 1887 (pub. 1888), pp. 64 and 65.

J. W. Judd. **Lancashire.**

Report on the Manchester (Oxford Road) Boulder [a much-altered porphyrite, and originally, no doubt, an andesitic lava; the rock is very similar to some of the Lake district volcanic rocks, especially to that of Eycott Hill; 'I think there is little doubt that it came from the Lake district']. Proc. Liverpool Geol. Soc., vol. v. part 4, 1888, p. 370.

A. J. Jukes-Browne. **Lincolnshire.**

The Correlation of Midland Glacial Deposits with those of Lincolnshire [a letter criticising Mr. Deeley's conclusions]. Geol. Mag., July 1888, dec. iii. vol. v. pp. 332, 333.

P. Q. Keegan. **Isle of Man.**

In the Isle of Man [includes notes on the Silurian slates and other formations, and on the minerals of the Island]. Sci. Goss., April 1888, pp. 73-75.

P. F. KENDALL. **Lancashire.**

Note on an Erratic Block observed during excavations for a sewer in Oxford Street, Manchester [a block 9 ft. 6 in. long, of andesitic rock, probably from Honister and Coniston district]. Mem. and Proc. Manch. Lit. and Phil. Soc., Ser. 4, vol i. pp. 97-98.

R. KIDSTON. **York S.**

On the Fructification of two Coal-measure Ferns [one of which, *Crossotheca fimbriata*, is described as new from Monkton Colliery near Barnsley, and East Gawber Colliery, Barnsley, being sent by W. Hemingway, and the horizon being Middle Coal-measures shale over 'Barnsley Thick Coal']. Ann. and Mag. N. H., July 1888, Series 6, vol. ii. pp. 22-27, and Plate 1.

R. KIDSTON. **Northumberland, South Yorkshire.**

Additional Notes on some British Carboniferous Lycopods [giving description of *Lepidodendron veltheimianum* Sternb., Lower Carboniferous of Lumby Law Railway-cutting, near Edlingham, Northumberland; fruit of *Bothrodendron minutifolium* Boulay, Monkton Main Colliery, Barnsley; and *B. wiikianum*, Little Whickhope Burn, near first branch above Cross Sike, Northumberland]. Proc. Roy. Phys. Soc. Edinb., Session cxviii, 1888-89, vol. x. pp. 88-97 and Plate 4.

ROBERT LAW and JAS. HORSFALL. **Lanc. and Yorks.**

An Account of Small Flint Implements found beneath Peat on several elevated points of the Pennine Chain, lying between Huddersfield and Oldham [localities where found, and number obtained given; Section at March Hill where the greater number of them have been obtained, is detailed]. Trans. Manch. Geol. Soc. vol xix. Part 20, pp. 599-603.

G. A. LEBOUR. **Northumberland.**

On Thinolite and Jarrowite [the 'Thinolite' of Nevada identified with the 'Jarrowite' of the Tyne]. Rep. Brit. Assoc. for 1887. p. 700.

F. ARNOLD LEES. **West Yorkshire.**

The Flora of West Yorkshire [the second volume of the Botanical Series of Trans. Yorks. Nat. Union. Climatology is dealt with in pp. 3-61: the zones of altitude included in West Yorkshire are the Infer-agrarian, Mid-agrarian, Super-agrarian, and Infer-arctic; the next section (pp. 65 84) treats of the lithology of the Riding; with reference to the subject in hand, the various formations are grouped as Dysgeogenous, Pseudogeogenous, and Eugeogenous, their distribution being indicated on a coloured map; the physical characters of these formations and the soils they produce are discussed from a botanical standpoint]. 8vo, London, 1888.

H. CARVILL LEWIS. **North of England.**

The Terminal Moraines of the Great Glaciers of England [lays down the position of these moraines in the North of England]. Rep. Brit. Assoc. for 1887, pp. 691, 692; Nature, vol. xxxvi. p. 573, 1887; abstract given in Nat. Monthly, Oct. 1887, p. 37.

J. LOMAS. **Cheshire.**

On a Section of Boulder Clay near Hyde, Cheshire [with notes on the nature of the boulders, chiefly of hornblende-andesite]. Proc. Liverpool Geol. Soc., 1887, vol. v. Part 3, pp. 257-259.

R. TAYLOR MANSON. **Yorkshire.**

The Stranger's Stone, near Barnard Castle [details of an erratic block of Shap Granite on the bank of Deepdale Beck, a small stream running into the Tees, a little above Barnard Castle]. Nat., Jan. 1888, p. 21.

R. TAYLOR MANSON. **Yorkshire.**

The Low Field Boulder [details of the erratic block at Low Field near Pierce Bridge; Shap Granite; a smaller one near Cliffe Hall alluded to]. Nat., Jan. 1888, pp. 20, 21.

R. TAYLOR MANSON. **Durham.**

The Sadberge Block [details of an erratic block at Sadberge, three miles N.E. of Darlington; encrinital blue limestone; recently dedicated as the 'Jubilee' Stone]. Nat., Jan. 1888, p. 22.

R. TAYLOR MANSON. **Durham.**

The Bulmer's Stone, Darlington [details of the erratic block in Northgate, Darlington, known as the 'Bulmer's' Stone; Shap Granite]. Nat., Jan. 1888, pp. 22, 23.

J. E. MARR and R. H. TIDDEMAN. **West Yorkshire.**

La Géologie de l'Ouest du Yorkshire [notes for the excursion of the International Geological Congress; there are descriptions of the Ordovician, Silurian, Carboniferous, and Permian rocks, of the chief earth movements in the district, of the Glacial deposits, and of the Victoria Cave, besides a bibliography and a coloured map. The chief points are Mr. Marr's treatment of the Lower Palæozoics, and Mr. Tiddeman's account of the two types of the Carboniferous, the southern division of the area containing the coral-built masses, which he terms 'knoll reefs']. Congrès Géologique International, 4me Session, Explications des Excursions, pp. 63-106.

J. E. MARR and H. A. NICHOLSON. **Westmorland.**

The Stockdale Shales [the authors have minutely studied these beds, dividing them into a lower (Skelgill) and an upper (Browgill) division, with fifteen zones characterised by special graptolites and trilobites; these zones show the closest correspondence with the Birkhill and Gala groups of Southern Scotland: among the fossils described and figured are new species of *Cheirurus*, *Acidaspis*, *Harpes*, *Ampyx*, *Proëtus*, and *Atrypa*]. Quart. Journ. Geol. Soc., vol. xliv. pp. 654-732, and pl. xvi; abstract in Geol. Mag. (3) vol. v. pp. 327-328; Phil. Mag., June (5), vol. xxv. pp. 519-520; Nature, May 31st, vol. xxxviii. p. 118; Ann. and Mag. N. H., July 1888, 6th Series, vol. ii. p. 117.

P. H. MARROW. **Isle of Man.**

A Geological Ramble in the Isle of Man [raised beach at Carrickey Bay alluded to, also conglomerate at Poolvash Bay, the so-called Poolvash marble, Silurian schists and metamorphism, the Foxdale lead mines, etc.]. Trans. Liverpool Geol. Assoc., 1886-7, vol. xiv. pp. 56-62.

W. MAWER. **Lincolnshire and Cumberland.**

Primer of Micro-Petrology [note on large boulder of an ophitic rock (dolerite) known as the 'Blue Stone,' at Louth, with figure of a microscopic slice; pp. 67 and 12; also figure of chiastolite-slate from Skiddaw; p. 52.]. 70 pp., 12mo., London, no date [1888].

CHARLES E. MILES. **Lancashire and Cheshire.**

The Mersey Estuary (Abstract) [assumes that at the close of the glacial period, when the river would be much shallower and extending further out to sea, the mouth would, by tidal or other action become barred by sand or clay; this would give rise to a lake, which slowly filling up by deposits of blue clay arising from denuded boulder clay brought down by the river, would produce marshy ground and subsequent peat; in the course of time the erosion of the sea would form the present estuary]. Trans. Liverpool Geol. Assoc., vol. vii. 1886-7, pp. 85-89.

T. CARTER MITCHELL. **Yorkshire.**

The Cundall Boulder [details of a boulder at Cundall, near Boroughbridge; Shap Granite]. Naturalist, Nov. 1888, p. 348.

ROBERT MORTIMER. **York E.**

The Youlthorpe Boulder [details of a boulder at Youlthorpe, between Bishop Wilton and Stamford Bridge; a very quartzose sandstone]. Naturalist, Nov. 1888, p. 348.

G. H. MORTON. **North of England generally.**

Early Life on the Earth [references to earliest species of Foraminifera recorded; *Saccammina carteri* occurs in the Lower and Upper Bernicean of Northumberland; Arachnida—species are recorded from the Coal Measures

of Lancashire; Insecta—two wings of an Orthopterous insect, Protophasmidæ, from the Ravenhead Beds, Middle Coal Measures, are in the Liverpool Free Museum; Polyzoa—represented in the Coniston Limestone by *Fenestella assimilis* and *Ptilodictya*; Gasteropoda—*Rhaphistoma* sp. occurs at Skiddaw; Cephalopoda—*Orthoceras vagans* in the Coniston Limestone at the top of Skelgill; Amphibia—the earliest occur in the Coal Measures, and belong to the Labyrinthodonta (see Mr. Atthey's collection in the Museum of the Nat. Hist. Soc. of Northumberland at Newcastle-on-Tyne); Reptilia—the earliest belong to the Lacertilia, and occur in the Permian; there are two species, *Protosaurus speneeri* and *P. huxleyi* from Durham]. Proc. Liverpool Geol. Soc., vol. v. part 3, 1887, pp. 209-241.

G. H. MORTON. **Lancashire.**

The Microscopic Characters of the Millstone Grit of South-West Lancashire [at Knowsley Park, Grimshaw Delph near Wigan, and Parbold: the grit is mainly of quartz-grains, with some reddish orthoclase and a little mica]. Proc. Liverpool Geol. Soc., 1887, vol. v. pp. 280-283.

G. H. MORTON. **Lancashire.**

Report of Field Meeting at Eastham [describing the Lower Bunter as there seen]. Proc. Liverp. Geol. Soc., 1887, vol. v. p. 291.

G. H. MORTON. **Cheshire.**

Stanlow, Ince, and Frodsham Marshes [the south coast of the estuary of the Mersey between Ellesmere Port and the river Weaver is bounded by a marsh, which is divided at Ince by a promontory of the Lower Pebble Beds, and there is an outlier of the same rock at Stanlow Point; a section of the beds about one hundred yards W. of Ince Lighthouse given]. Proc. Liverpool Geol. Soc., vol. v. part 4, 1888, pp. 349-352.

G. H. MORTON. **Lancashire.**

Local Historical, Post-Glacial, and Pre-Glacial Geology [a Presidential Address on the recent geology of Liverpool]. Proc. Liverpool. Geol. Soc., 1888, vol. v. pp. 303-334.

E. T. NEWTON. **York N.E.**

On the Skull, Brain, and Auditory Organ of a new species of Pterosaurian (*Scaphognathus purdoni*) from the Upper Lias near Whitby, Yorkshire [exceptionally perfect specimen]. Phil. Trans., clxxix. 503-537, plates 77, 78.

THOS. PARKINSON. **Yorkshire.**

Reports upon Boulders near Northallerton [details are given of the following boulders:—Thornton-le-Beans, near Northallerton—Shap Granite; Thornton-le-Moors, near Northallerton—three boulders of Granite, coarse Dolerite or Gabbro, and closely-grained Trap or highly-altered fine Ash; North Otterington—Granite]. Nat., Nov. 1888, pp. 344-345.

JOHN H. PHILLIPS. **York N.E.**

Notes on Shap Granite Boulders at Scarborough [a number of erratic blocks collected in the neighbourhood of Scarborough noted—Shap Granite]. Nat., Jan. 1888, p. 23.

SIR JAMES PICTON. **Lancashire.**

Notes on the Local Historical Changes in the Surface of the Land in and about Liverpool [report only]. Research, Dec. 1888, vol. i. p. 97.

H. M. PLATNAUER. **Yorkshire.**

Reports upon Boulders in the Grounds of the Yorkshire Philosophical Society, York [details of sixteen boulders obtained from the Boulder Clay that was dug out when the York New Station was built, and now placed in the Museum Grounds; Shap Granite, Mountain Limestone, Oolitic Limestone, Lithostrotion, greenish-grey Trap, etc.]. Naturalist, Nov. 1888, pp. 344-345.

H. M. PLATNAUER. **Yorkshire.**

Note on some Crystals of Celestine [from the bed of the Nidd at Knaresborough]. Annual Report Yorks. Phil. Soc. for 1887, p. 34.

Naturalist.

H. M. PLATNAUER. **York S.E.**

Note on Hybodus obtusus Ag. [spines from Corallian of Malton district described and figured]. Ann. Rep. Yorks. Phil. Soc. for 1887, pp. 35-36, pl. 1.

C. POTTER. **Cheshire.**

On the Sand-dunes of the Cheshire Coast (Abstract) [the several characteristics of the New Red Sandstone of the district alluded to; by noting what actually occurs amongst the sand-dunes, and observing the phenomena presented by blown sand, he concluded that similar results occurred during the formation of the Triassic sandstone; the vegetation of the blown sand greatly instrumental in the building up and together the drifting loose material; the theories to account for the almost total absence of fossils in the Trias examined]. Trans. Liverpool Geol. Assoc. 1886-7, vol. vii. pp. 28-33.

T. MELLARD READE. **Cheshire.**

Report of field-meeting at Hilbre Island [relations between Bunter and Keuper well exhibited]. Proc. Liverp. Geol. Soc., 1888, vol. v. pp. 389-390.

T. MELLARD READE. **Lancashire.**

Notes on a bed of Fresh Water Shells and a chipped flint lately found at the Alt Mouth [the shells including *Limnæa peregra*, *Cyclas cornea*, and *Planorbis spirorbis*]. Proc. Liverp. Geol. Soc., 1886, vol. v. pp. 137-139.

T. MELLARD READE. **Lancashire**

Notes on a large Boulder found in driving a Sewer Heading in Oxford Street, Manchester [giving dimensions and manner of occurrence of the boulder 9 ft. 6 in. long, now in the grounds of Owens College, with a note by Professor Judd describing the rock as an altered andesite doubtless from the Lake district]. Proc. Liverp. Geol. Soc., Session 1887-8, pp. 12-14.

T. MELLARD READE. **Lancashire and Cheshire.**

An Estimate of Post-Glacial Time [from an examination of the denudation of the Boulder-Clay on the Lancashire and Cheshire coasts and the sequence of more recent deposits, the author places the close of the Glacial Period not less than 57,500 years ago.] Quart. Journ. Geol. Soc., vol. xliv. pp. 291-299; Abstr. in Proc. Geol. Soc., Feb. 29th, 1888; Nature, vol. xxxvii. pp. 478-479; Geol. Mag. April, dec. iii. vol. v. pp. 180-181; Phil. Mag., April (5), vol. xxv. pp. 319-320; Nature, March 15th, vol. xxxvii. pp. 478-479.

CLEMENT REID. **York S.E.**

Notes on the Geological History of the Recent Flora of Britain [with mention of *Betula nana* from submerged forests at Bridlington and Holmpton, *Prunus padus* and *Alnus glutinosa* (cones) from the post-glacial beds of Hornsea and Sand-le-meer, *Corylus avellana* (nuts) from the latter place, and *Phragmites communis* (panicles) in post-glacial peaty bed at Kelsey Hill]. Annals of Botany, 1888, vol. ii. pp. 179-199.

OSBORNE REYNOLDS. **Lancashire and Cheshire.**

On Certain Laws relating to the Régime of Rivers and Estuaries, and on the Possibility of Experiments on a small scale [treats the case of the Mersey inner estuary as illustrating the manner in which the configuration of the shore-line determines the banks and channels; the author has made a working model]. Rep. Brit. Assoc. for 1887, pp. 555-562.

L. RICHARDSON. **Cumberland.**

The Ascent of Cross Fell [noting swallow-holes near the limestone outcrop, fluor-spar at the lead-mines, etc.]. Nat. Hist. Journ., vol. xii. pp. 13-14.

C. RICKETTS. **Westmorland and York W**

The Base of the Carboniferous Limestone [describing its nature at Kirkby Lonsdale and at Shap Wells (where the conglomerate contains fragments of the Shap Granite); also near Ingleborough]. Proc. Liverpool Geol. Soc., 1887, vol. v. pp. 262-271.

C. RICKETTS. **Lancashire.**

Report of Excursion along the Mersey Tunnel Extension and Wirral Railway [noting sands imbedded in the Boulder-clay]. Proc. Liverpool Geol. Soc., 1887, vol. v. pp. 388, 389.

C. Ricketts [conductor of excursion]. **Cheshire.**

Liverpool Geological Association [at Flaybrick Hill, Birkenhead, June 11th, 1888]. Research, July 1888, p. 15.

H. G. Seeley. **York N.E.**

On the Mode of Development of the Young in Plesiosaurus [describes fœtal plesiosaurs from the Lias of Whitby]. Rep. Brit. Assoc., 1887, 697, 698.

A. C. Seward. **Lancashire.**

Woodwardian Museum Notes. On Calamites undulatus (Sternb.) [from Coal-measures near Wigan; the specimen supports the view that the undulating character of the ribs on which the species is founded is due merely to pressure]. Geol. Mag., July 1888, (3), vol. v. pp. 289-291 and plate ix.

A. C. Seward. **Yorkshire.**

Woodwardian Museum Notes. On a Specimen of Cyclopteris (Brongniart) [a large specimen from the Upper Coal-measures of Brierly Common]. Geol. Mag., August 1888, dec. iii. vol. v. pp. 344-347.

Theodore Sington. **Lancashire.**

On the recently disclosed Sections of the Superficial Strata along Oxford Street, Manchester [detailed sections obtained during the construction of a sewer along Oxford Street, Manchester, from the river Medlock to High Street, at a depth of about 30 ft.]. Trans. Manchester Geol. Soc., vol. xix. Part 20, pp. 603-606, with section.

J. Spencer. **York S.W.**

On the occurrence of a Boulder of Granitoid Gneiss or Gneissoid Granite in the Halifax Hard Bed Coal [this boulder found in Hard Bed Coal, Shibden Head Pit, near Halifax; it is of a greyish colour, about four inches in length by about two and a half square; the angles have been worn off, and the faces polished and striated transversely; this most probably due to slickensiding; Prof. Bonney has examined a section of it, and says: 'It is one of unusual interest; it is not a quartzite, but a granitoid gneiss or gneissoid granite, probably derived from some mass of Pre-Cambrian age.' The conditions attending the deposition of the strata enclosing the coal-seam in which it occurred are added, and also the general character of the strata, and the direction from whence they appear to have come. The author, in conclusion, says it is reasonable to attribute the transportation of such boulders to drifting and tangled masses of vegetable matter rather than to ice]. Proc. Yorks. Geol. and Polyt. Soc., vol. xi. part 1, pp. 96-100.

J. Spencer. **Lancashire.**

Evidence of Ice-Action in Carboniferous Times [abstract only; the author ascribes to floating ice certain striations in the Haslingden Flag-rock and at a similar horizon near Rochdale]. Quart. Journ. Geol. Soc., vol. xliv (Proceedings), pp. 93, 94.

W. Squire. **Durham, etc.**

The Sulphur Springs of Great Britain and their Therapeutic Action [giving particulars of these springs, and especially of Dinsdale-on-Tees, with a brief notice of the geological conditions of this place]. Lancet, Aug. 4th, 1888, vol. ii. pp. 201-203.

M. Stirrup. **Lancashire.**

Foreign Boulders in Coal Seams [an exhaustive description of various boulders found in coal-seams of Lancashire collieries from 1851 downwards; classification of several by Prof. Bonney included; in discussion, Mr. J. Dickinson, F.G.S. (the President), believes them 'to be simply freaks of nature, assuming the form which it has been assigned for such matter to take; he would no more expect to find a boulder in the middle of a coal seam than in the middle of a cocoa-nut.' The large boulders from the Astley Pit at Dukenfield are quartzites; the large one from the Old Meadows Pit is granite; another a dark gray quartz felsite, etc., etc.]. Proc. Manch. Geol. Soc., vol. xix. Part 16, pp. 405-428, with sections and sketches of boulders.

M. STIRRUP. **Lancashire.**

On Foreign Boulders in Coal Seams [records numerous cases in Lancashire collieries]. Rep. Brit. Assoc. for 1887, pp. 686-688.

A. STRAHAN. **Westmorland, West Yorkshire, and Lancashire.**

The Geology of the Country around Kendal, Sedbergh, Bowness, and Tebay, by W. T. Aveline and T. McK. Hughes, 2nd ed. Mem. Geol. Surv. England and Wales (explanation of Quarter-sheet 98 N.E.) [chap. i. describes the physical geology of the district; ii. the Lower Palæozoic rocks; iii. the Carboniferous system; iv. the Shap granite and igneous dykes; and v. the Glacial and other superficial deposits; an appendix gives lists of the fossils, including a table by Prof. Lapworth showing the distribution of the Graptolites]. 8vo, 94 pp. and iii. plates, London, 1888.

R. A. SUMMERFIELD. **Yorkshire.**

Boulders at North Stainley, near Ripon [details of a large Carboniferous gritstone boulder at North Stainley, and notes upon others in the district]. Naturalist, Nov. 1888, p. 345.

A. NORMAN TATE. **Yorkshire.**

Scientific Aspects of Health Resorts. No. 1. Harrogate [the special geological features of this district briefly reviewed, with a diagrammatic section through the Harrogate anticlinal from Saltergate Hill to Plumpton Rocks given; notice and views of Brimham Rocks added]. Research, July 1888, pp. 5-7 and illustrations.

A. NORMAN TATE. **Derbyshire.**

On the Colouring Matter of the Mineral 'Blue John' [ascribing the purple colour of this fluor-spar to organic matter, though a minute quantity of iron is also present]. Proc. Liverp. Geol. Soc., 1888, vol. v. pp. 384-385.

J. J. H. TEALL. **Northern Counties in general.**

British Petrography: a Description of the Ordinary Rocks of the British Isles [the early parts of this work were noticed in the Bibliography for 1886; the whole volume is now issued, and forms a most useful addition to the literature of the subject; the North-Country rocks figured include, besides those already noted, Andesitic Dolerite of Preston (xxx), Quartz-felsite of Ridlees Burn (xxxi), Mica-trap of Swindale Beck (xxxii), Chiastolite Slate of Skiddaw (xxxiii), Biotite-Granite of Shap (xxxv), Enstatite-Augite-Andesite (xxxvi) and Enstatite-Porphyrite (xxxvii) of the Cheviots, Perlitic Felsite of Long Sleddale (xxxviii), and Augite-Granite of Cheviots (xxxix)]. viii and 469 pp. and xlvii plates, roy. 8vo. London, 1888.

O. TORELL. **York S. and Lincolnshire.**

On the Extension of the Scandinavian Ice to Eastern England in the Glacial Period [the ice-stream from southern Scandinavia crossed the North Sea to Holderness and Lincolnshire; the 'Rhombenporphyr' of Christiania has been found at Grimsby, and the syenite of Fredriksvarn in Holderness]. Rep. Brit. Assoc. for 1887, pp. 723-724; abstract in 'Nature,' vol. xxxvi. p. 573, 1888.

R. H. TRAQUAIR. **Derbyshire and Lancashire.**

New Palæoniscidæ from the English Coal-Measures [the new species described include *Elonichthys binneyi* from Stanton, Derbyshire; *Rhadinichthys planti* from Colleyhurst, near Manchester, and Burnley, and *Acrolepis wilsoni* from the Yoredale shales of Turnditch near Belper]. Geol. Mag., 1888 dec. iii. vol. v. pp. 251-254.

W. A. E. USSHER, A. J. JUKES-BROWNE, and A. STRAHAN. **Lincolnshire.**

The Geology of the Country around Lincoln, Mem. Geol. Surv. England and Wales (explanation of Sheet 83) [notes on the Carboniferous, Permian, and Trias are given by Mr. W. H. Dalton; succeeding chapters describe the Rhaetic rocks near Gainsborough; the Lower, Middle, and Upper Lias,

the Lower, Middle, and Upper Oolites, the Lower Cretaceous ('Neocomian') and Upper Cretaceous, and the Glacial and Post-Glacial deposits; appendices give tables of fossils, particulars of borings and of the mineral springs of Woodhall Spa]. 8vo, 218 pp., London, 1888; Reviewed in Geol. Mag., December 1888, dec. iii. vol. v. pp. 571, 572.

W. Y. Veitch. **York N.E.**

The Saltburn Boulder [details of the above boulder are given; Shap Fell Granite]. Nat., Nov. 1888, p. 346.

G. R. Vine. **Yorkshire.**

A Monograph of Yorkshire Carboniferous and Permian Polyzoa, Part 1 [1, Introduction; 2, Bibliographical References; 3, Terminology. *Cystodictya parallela* and *C. rariscosta*, and *Goniocladia cellulifera*; generic and specific characters given, with their distribution, followed by details of their minute structure]. Proc. Yorks. Geol. and Polyt. Soc., vol. xi. part 1, pp. 68-85, with two plates.

J. F. Walker. **York S.E.**

On the Occurrence of Terebratula Gesneri in Yorkshire [specimens of this rare brachiopod in Malton Museum from Coral Rag of North Grimston; figures given]. Annual Report Yorks. Phil. Soc. for 1887, pp. 33, 34.

T. Ward. **Cheshire.**

The History and Cause of the Subsidences at Northwich and its Neighbourhood, in the Salt District of Cheshire [the abstraction of the salt in solution by pumping leaves cavities]. Rep. Brit. Assoc. for 1887, pp. 713, 714; Nature, 1887, vol. xxxvi. p. 572.

Arthur Watts. **Durham.**

A Boulder at Seaham Harbour [details of a boulder in the grounds of Hawthorne Tower, Seaham Harbour; Encrinital Carboniferous Limestone]. Nat., Nov. 1888, p. 348.

William Watts. **Lancashire and West Yorkshire.**

Distribution of Erratics and Boulder Clay on the lower portions of the Drainage Areas of the Oldham Corporation Waterworks [the Strinesdale, Piethorn, Denshaw, and Castleshaw valleys described, with list of forty named erratics found on these drainage areas]. Trans. Manchester Geol. Assoc., vol. xix. Part 20, pp. 584-598.

Jas. Wilding. **Lancashire and Cheshire.**

The Use and Abuse of Stone in Building (Abstract) [the Triassic Sandstones of Runcorn, Woolton, Everton, and Storeton briefly alluded to in eulogistic terms]. Trans. Liverpool Geol. Assoc., vol. vii. 1886-7, pp. 90-91.

W. C. Williamson. **York S.W.**

Report of the Committee, consisting of Professor W. C. Williamson and Mr. Cash, for the purpose of investigating the Carboniferous Flora of Halifax and its neighbourhood [the most important result for the year is the identification of the fruit of Calamites]. Report Brit. Assoc. for 1887, pp. 235-236.

W. C. Williamson. **Lancashire and York S.W.**

The Fossil Trees of the Coal Measures [an address upon Stigmariæ, with particular reference to the Clayton Fossil Tree now in the Museum of Owens College, Manchester]. Trans. Manch. Geol. Soc., vol. xix. Parts 14 and 15, pp. 382-388.

H. A. Woodward. **Lancashire.**

Boulders in Coal Seams [brief note on three boulders found in the Trencherbone Mine, Newtown Collieries]. Proc. Manch. Geol. Soc. vol. xix. part 18, p. 488.

YORKSHIRE NATURALISTS' UNION.

28th ANNUAL REPORT, for 1889.

Your Executive, in presenting the 28th Annual Report and Statements of Accounts, have to pass in review a year of successful work, whether as regards the interest maintained in the Excursions, the value of the publications, or the amount of work achieved by the various Committees appointed for special research.

The Meetings which have been held during the year have been five in number, one in each division of the county, the places and dates having been as follows:—

Huddersfield for Holmfirth Valley, Whit-Monday, June 10th.
Robin Hood's Bay and the Peak, Friday, June 21st.
Harrogate for Plumpton and Rudding Parks, Saturday, July 13th.
Upper Teesdale, Saturday to Bank Holiday Monday, August 3rd to 5th.
Malton for Kirkham Abbey and Acklam Brow, Wednesday, September 4th.

For each of these meetings the usual descriptive circular, which is so conducive to the convenience of members and associates undertaking the day's explorations, was issued, and at all the meetings good results were achieved.

The opening meeting, arranged for Whit-Monday, at Huddersfield, was well attended, notwithstanding the threatening aspect of the weather. The country chosen for investigation was the millstone grit district lying S.W. of Holmfirth, including the Holme Valley, Bilberry Reservoir, Ramsden Edge and Harden Moss. The meeting was held at Huddersfield, Mr. Chas. P. Hobkirk, F.L.S., President of the Botanical Section, being in the chair.

It will be remembered that the excursion which was planned last year (1888) for visiting the Peak or South Cheek of Robin Hood's Bay, was but poorly attended, owing to the incessant rain. It was therefore arranged that the same ground should be again visited, and the second excursion of this year took place there, on the 21st of June, when there was a large attendance, attracted partly by the fine weather and beautiful scenery, partly by the fact that the excursion was under the leadership of a distinguished ex-president of the Union, Mr. W. H. Hudleston, F.R.S. The Marine Zoology Committee were able on this occasion to do good work by means of a steam launch and trawl, which was kindly placed at their disposal by Major Woodall. The general meeting was held at Whitby, under the chairmanship of the Rev. E. Maule Cole, M.A., President of the Geological Section.

The third excursion was held at Harrogate, on Saturday, the 13th of July, for the investigation of the Crimple Valley, Rudding and Plumpton Parks, and the geological exploration of Hampsthwaite and Clint. At the general meeting the chair was successively occupied by Mr. Thomas Bunker, President of the Vertebrate Section, and Rev. R. A. Summerfield, B.A.

A departure from the usual practice of the Union was made in the case of the fourth excursion, when the meeting which was held at the High Force Inn, on Bank Holiday Monday, the 5th of August, was preceded by a three-days' excursion commencing on the Saturday previous, for the investigation of the south or Yorkshire bank of the Tees from Middleton up to the junction with Maize Beck. At the meeting, which was attended by about forty members, the chair was occupied by the President of the Union, Mr. H. E. Dresser, F.L.S., who on this occasion made his first acquaintance with the Union and its members.

The excursion programme was brought to a successful termination on Wednesday, the 4th of September, when a visit was paid to the lovely valley of the Derwent at Kirkham Abbey and Howsham Woods, the geologists examining the N.W. escarpment of the wolds at Acklam Brow. The meeting was held at Malton, the chair being occupied by the Rev. W. C. Hey, M.A., President of the Conchological Section.

On all these occasions the Union has been indebted to the kindness which the land-owners of Yorkshire have always been so ready to manifest in facilitating research on their estates; and the facilities which the various railway companies which run on Yorkshire soil have granted, have contributed their share to promoting the success of the Union's investigations.

The Societies which constitute the Union are now forty in number, as against thirty-eight last year, the loss of two—the Ripponden Society, which has ceased to exist, and the Bradford Microscopical Society, now amalgamated with the Bradford Naturalists' Society—being more than counterbalanced by the accession of four Societies, three of them (Pocklington Literary and Philosophical Society, Purlwell Field Club, and Yeadon Geological Society) being newly-founded organisations, and the fourth (Huddersfield Naturalists' Society), the veteran society which took a leading part in the original foundation of the Union twenty-eight years ago, and which it is a pleasure again to enrol on the list.

The statistics with which the secretaries of the different Societies are good enough to furnish the Union from year to year show a considerable increase in the number of Associates, the total membership

of the 40 Societies being now 2,517, or an increase of 408. This, with the number of direct members added, makes the total numerical strength of the Union amount to about 2,925.

The Membership now stands at 410, an increase of 35 on the previous year. During the year 60 new members have been elected, and in this connection the Union has been much indebted to several of its Hon. Local Treasurers and to other members for the successful exercise of their influence with such of their friends as take interest in natural history, or whose sympathies incline them to support the work which the Yorkshire Naturalists' Union carries on. It will not be invidious to mention here that the Union is especially indebted to its old friend Mr. S. Chadwick, of Malton, who has been directly instrumental in securing nearly half of the total number of new members elected during the year.

The Financial Position of the Union has materially improved during the year, owing to the unremitting and vigorous attention which your Hon. Treasurer and the various Hon. Local Treasurers have given to the collection of the very large amount of outstanding arrears which was reported last year as resulting from the total disablement of your Honorary Secretaries during the year 1888. The persistent attention given to this matter has had the result that not only have arrears been collected to the amount shown in the balance-sheet, but the current year's subscriptions have been collected to an amount which has never been shown for a current year in any previous balance-sheet. Much credit is due to the Hon. Local Treasurers for the very considerable and valuable service which is thus rendered by them to the Union. In several of the collecting districts there are at present no arrears whatever outstanding, and it is trusted that during the coming year this state of things may have become the case in all the districts.

Much, however, depends upon the members themselves, who can, by prompt payment of their contributions, do very much to lighten the heavy burden which is always cast upon an hon. treasurer, and in connection with this subject it is to be noted with satisfaction that a considerable number of members have signed the form which authorizes the payment of their subscriptions to the Union's bankers by their own bankers, a course which prevents subscriptions falling into arrear, and which saves much trouble, not only to the honorary officers of the Union, but to the members themselves.

It may be here noted that a little misunderstanding has existed in the case of a few members (fortunately, not many) who have not taken into consideration the absolute necessity of a definite and written resignation being tendered by every member wishing to dis-

continue his subscription. It may be pointed out that members on election sign a form in which they undertake to pay their subscriptions 'until further notice,' and that it is very needful, in order to obviate all risk of misunderstanding, that such notice of withdrawal be in writing, and forwarded direct to the Hon. Secretaries; and it should be further noted that any such notice expires at the end of the year in which it is given. It hardly needs to be added that some such arrangement be made, in order that the Union may be able to discharge its own financial engagements entered into on the basis of the subscriptions realising their nominal amount.

The Publications of the Union have been as in previous years.

The Transactions.—Part 12 was issued in January last, and Part 13 within the past few weeks, both consisting of sheets of the re-issue of Mr. Baker's valuable work on 'North Yorkshire: its Geology, Climatology, and Botany,' of the latter portion of which the Natural Order Caryophyllaceæ has been reached.

The printers are proceeding with the sheets intended to form the next instalment of 'North Yorkshire,' and the continuations of other papers are in course of preparation by their respective authors. Messrs. Clarke and Knubley are engaged upon the 'Birds of Yorkshire'; Messrs. Nelson and Taylor upon the list of Yorkshire Mollusca, and Rev. W. C. Hey upon that of Coleoptera—of all of which sheets will be printed as soon as received from the authors.

The Library continues to increase by means of donations and exchanges. The necessity for increased accommodation which was referred to in the last annual report, has been met during the year—partly by the purchase of a new bookcase, but chiefly through the kindness of the Committee of the Leeds Mechanics' Institution, a body to whom the Union has been indebted in so many ways in the past, who have placed at the Union's service a different room, which affords much superior accommodation and greater convenience. The consequent removal of books and other property has delayed the completion of the administrative work upon which the Librarian was engaged at the date of the last report.

The Sections of the Union have carefully carried on their work during the year, and it is to their efficient working that the success attending the excursions has been attributable.

Committees of Research.—This important feature of the Union's work has been further developed during the past year, by the appointment of a new Committee, viz., on the Erosion of the Yorkshire Coast.

The Boulder Committee has again accomplished a large amount of valuable and highly-appreciated work, as shown by their Report,

which was published in full in 'The Naturalist' for October 1889, and the great importance of what they have done has again been fully and generously acknowledged at the British Association meeting.

The operations of the Marine Zoology Committee have been mainly confined to a couple of dredging expeditions, the first on the occasion of the Union excursion to Robin Hood's Bay, the second in co-operation with members of the Leeds Naturalists' Club. On both occasions numerous specimens were obtained, some of which remain to be submitted to specialists. Some difficulty was experienced from the want of proper dredging appliances, without which it is impossible to obtain many of the smaller organisms, and the Committee consider it very desirable that such apparatus be procured in view of next season's work. The report has already appeared in 'The Naturalist.'

The Fossil Flora Committee has prepared the first portion of a report on their subject from the pens of Mr. William Cash and Mr. Robert Kidston, which your Executive hope shortly to publish.

The Coast Erosion Committee have had careful measurements at certain points on the coast made for future reference, beyond which their inquiries have not been as yet extended.

Proposals will be brought forward at the present meeting for the appointment of three additional Committees, to deal with important subjects upon which the British Association has this year decided to take action, and in which it is highly desirable that all local Societies should co-operate.

One of these is to be for investigating the causes of the Disappearance of Native Plants, and a second for collecting and recording Geological Photographs of Yorkshire sections. The third committee is for the investigation of the Invertebrate Fauna and Cryptogamic Flora (microscopic forms of life) of the fresh waters of the county, and your Executive recommend that the existing Section G (Micro-Zoology and Micro-Botany) be converted into such committee. It is manifestly impossible for work on such a subject to be carried on and reported upon at the meeting in the same manner as the work of the other sections of the Union.

British Association.—The Union has again been selected as one of the Corresponding Societies of the British Association, and was represented at the Newcastle meeting of the Association by the Rev. E. P. Knubley, M.A., whose detailed report was published in 'The Naturalist' for November 1889.

The next meeting of the Association is to be held at Leeds in September next, when it is hoped that all Yorkshire naturalists will do what lies in their power to make it a thorough scientific success.

May 1890.

New Members of General Committee.—Your Executive recommend that Mr. R. Barnes of Saltburn, Mr. Godfrey Bingley of Leeds, Mr. James Booth, Mayor of Halifax, Mr. Frederick Brittain of Sheffield, Mr. Riley Fortune of Harrogate, Mr. John Gerrard of Wakefield, Mr. Hugh Richardson of Sedbergh, Mr. Henry Speight of Bradford, Dr. F. J. Sawdon of Hull, and Mr. Thos. F. Ward of Middlesbrough, be the ten additional permanent members of the General Committee for this year.

Your Executive have again considered the desirability of the members having a direct voice in the choice of representatives on the General Committee, and they hereby recommend that in future the ten additions made annually to the list of permanent members be made by vote of the members, the voting to be by written communications forwarded to the Hon. Secretaries, and afterwards examined and reported upon by scrutineers to be appointed by the General Committee at the Annual Meeting.

The Presidency.—In conclusion, your Executive have to announce that the office of President has been accepted by the Right Rev. Wm. Walsham-How, Lord Bishop of Wakefield—a naturalist of old standing, who in years gone by was successively the founder, hon. secretary, and president of the Oswestry Field Club, one of the most successful of the Field Clubs of the West of England.

Your Executive have further to express their warm sense of gratitude to the retiring President, Mr. H. Eeles Dresser, for the honour which he has conferred upon the Union by his tenure of the office.

NOTES AND NEWS.

The Anthropological Institute of Great Britain and Ireland have issued an important circular, announcing the formation of a Committee of Aid in conducting Anthropological and Archæological Explorations. In carrying out the Ancient Monuments Act of 1882, it has been noticed that, whilst, owing to the public feeling enlisted in their favour, comparatively little damage is being done to ancient monuments as defined by the Act, a large amount of valuable information is constantly lost by the destruction of ancient relics, in the course of agricultural, mining, and other operations which the Act of Parliament is powerless to prevent. Attention is also drawn to the unsatisfactory way in which many archæological investigations are conducted, and the absence of any systematic method of recording the measurements of human skeletons, the absence of any uniform system of measurement, the absence of any systematic measurement of the bones of animals, the neglect of valuable evidence owing to the explorers not knowing what to observe and record. It is thought that landowners might be induced to undertake explorations upon their own property, if a Committee were formed to which they could refer for information as to the proper method of conducting them. The Council of the Institute have nominated therefore Lieut.-General A. Pitt Rivers President, Prof. W. Flower, J. G. Garson, A. L. Lewis, F. G. Hilton Price, and C. H. Read, as such Committee, and their functions are defined in the circular. Explorers desiring the assistance of the Committee can address the President at Rushmore, Salisbury, or 4, Grosvenor Gardens, London.

THE CONNEXION BETWIXT YORKSHIRE AND SCANDINAVIA.

J. E. MARR, M.A., Sec. G.S.,
St. John's College, Cambridge.

It is of interest to trace back the influence of Scandinavia upon this country from historic into pre-historic times, and so backwards into remote ages. To this influence, exerted again and again in past times, are due not only many of the characters of the county itself, but also to some extent the temperament of its inhabitants, whether acquired from direct intercourse with the Scandinavian peoples, or developed in conformity with the physical surroundings.

As is well known, the influence of the Scandinavians in historic times is testified to by the abundance of 'wykes,' 'bys,' and 'thorpes,' along the coast or situated in the interior of the county, whilst pre-historic relics yield evidence of communication between the two countries, during the Neolithic or 'polished stone' age. To give one instance, the remarkable ripple-flaked stone tools found so abundantly in Denmark occur also in Yorkshire, and in no other English county.

Prior to this, in the Great Ice Age, when nearly every part of our island was covered with an icy mantle descending from the highlands of our own country, the east coast of Yorkshire was subjected to the invasion of ice from Scandinavia, as shown by the occurrence of Scandinavian boulders in the Glacial Clays of the coast region, and after the recession of the ice, the district, subject to a sub-glacial climate, was occupied by plants similar to those of Norway and other mountain regions, which still maintain an existence in the hilly district of the West Riding, where they are accompanied by certain Scandinavian insects.

During the formation of the Chalk and Oolitic rocks, the site of the county was occupied by a sea, spreading over a large part of what is now north-central Europe, and doubtless at this period much of the material which was spread out upon the sea-floor was derived from the wearing away of the great continental tract, of which mention will be presently made. These secondary rocks, when last seen, are striking over the North Sea, and we get fragmentary representatives of both Chalk and Oolites in Scania, the most southerly province of Sweden.

When we pass to an examination of the palæozoic sediments, the influence of this great continental area, of which Scandinavia

remains as a fragment, becomes most marked. Lower Palæozoic and earlier rocks form a large part of Scandinavia and Scotland, and the recent researches of Prof. Lapworth and the Geological Surveyors have given us much insight into the constitution of this old land, fashioned in Lower Palæozoic times by the development of a set of crust-wrinklings having a general N.E.—S.W. trend, which gave rise to a highland region running from Northern Russia, through Sweden and Norway, Scotland, and North Ireland, to the site of the present Atlantic Ocean. Sufficient remains of this old region to give us some notion of its original character, for the plications of the rocks and the nature of the metamorphism they have undergone are such as are characteristic of mountain regions, of which repeated and long-continued erosions have left us the basal wreck. That much of this eroded material was washed over the site of Yorkshire was long ago suggested by Dr. Sorby, from an examination of the coarser sediments of the Carboniferous system, and there is no doubt that that great rock-group to which Yorkshire owes so much of its prosperity, and the older portions of which have originated scenery unrivalled of its kind, has been derived from the partial destruction of the old highland region developed by the crust-movements, which gave rise to what is now generally spoken of as the Scandinavian system of folds.

But not only did these movements furnish us with a source of supply of material for the formation of the massive Carboniferous rocks of the county, but the very site of the county was occupied by a similar set of rocks, folded also in Lower Palæozoic times, though not to such an extent as the rocks of more northern regions, and planed down at the end of Lower Palæozoic times to form a nearly even sea-floor, upon which the Carboniferous strata were deposited.

This floor may be looked upon as the very foundation of Yorkshire, and it is only brought to light where profound disturbances have elevated a tract of country far above the level of surrounding regions.

It is well known that the beautiful Mountain Limestone district in the neighbourhood of Ingleton consists of gently-sloping beds of limestone forming parallel scars, the whole lying evenly upon a planed floor of greatly-folded slate-rocks, which occupy the lower portions of the valleys of Ingleton, Clapham, Austwick, Settle, and Malham.

An examination of these slate-rocks, which appertain to the Ordovician and Silurian systems brings to light some Scandinavian affinities, for although at the time of their formation, north-western

Europe was largely occupied by a great ocean tract, the deposits formed therein varied considerably in different regions. These Yorkshire deposits are of interest as forming to some extent a connecting link between the slate-rocks of the Lake district and the ancient silts of Scandinavia. The oldest rocks visible are the green slates of Ingleton, no doubt largely derived from the destruction of some volcanic tract such as occurred about the time of their formation in the adjoining Lake country area. Resting upon them are some calcareous shales, forming the top of the Ordovician system, and undoubtedly equivalent to the more calcareous strata known further west as the Coniston Limestone, but having affinity also with the more clayey *Trinucleus* shales of Sweden. It is interesting to find an old acid lava at Wharfe Mill Dam near Austwick, for great masses of such lavas were poured out in the region of the Lakes and in North Wales at this time, and the equivalent shales of the island of Bornholm contain some ashy bands. The characteristic *Trinucleus* of these shales in Sweden occurs in abundance at Norber near Settle, where it is accompanied by a beautiful and rare trilobite of the genus *Dindymene*, which is also found in Sweden.

Of recent years, the study of the remarkable sea-pens known as graptolites has led to their utilisation as a means of correlation of these early sediments and we find at Norber the form *Dicellograptus anceps* which occurs in beds of this age in Sweden.

The Silurian rocks of Yorkshire are of Llandovery, Wenlock and Ludlow ages. To the former age is assignable the *Phaeops elegans* limestone, containing a trilobite characteristic of the equivalent beds in Norway where it was first described, whilst, in the Sedbergh area, we find a group of graptolitic shales of this age with the genera *Monograptus*, *Rastrites*, *Dimorphograptus* and other forms marking this horizon over a large part of Europe.

To the Wenlock beds belong the flags of the Wharfe Valley, containing *Monograptus priodon*, and *Retiolites geinitzianus* also found very widely distributed.

Above these are grits, to some subordinate shales of which the remarkable Moughton whetstones are probably referable. They contain *Monograptus nilssoni* and *M. dubius* found on the same horizon in Scandinavia and marking the base of the Ludlow series. They are succeeded by the flags of the great quarries of Ribblesdale with *Monograptus colonus*, *M. roemeri* and *M. bohemicus*, above which are some grits also referable to the Lower Ludlow, and forming the highest Silurian rocks of this area, though still higher beds, the Bannisdale slates occur near Sedbergh and equivalents of the Upper Ludlow are found immediately west of the Lune.

It will be gathered from the preceding remarks that the plicated rocks of the old Yorkshire floor give us the first indications of that connexion with Scandinavia, which has been more or less marked ever since. I have dwelt specially upon the development of these rocks, because although, thanks to the energy of Yorkshire geologists, a great part of the geology of the county has been very fully elucidated, this early chapter is not yet fully written, and I would recommend those who love fine scenery, country inns whose comfort has not yet been entirely destroyed by the rush of the destructive tourist-wave, and physical geology which is unrivalled by that of any other district of our island, to complete our knowledge of these ancient rocks. The fossiliferous Ordovician rocks of Norber and of the Sedbergh district will, doubtless, yield many rare forms to further search, and the Silurian slates will furnish a rich harvest, in addition to that which has been hitherto reaped from them.

Finally, the explorer of this delightful region will not enter upon an undescribed district, but will find in Messrs. Davis and Lees' work upon West Yorkshire an admirable description of the geology of the district.

NOTE—ORNITHOLOGY.

Nesting of the Cirl Bunting in Yorkshire.—I have great pleasure in calling attention to the nesting of the Cirl Bunting in Yorkshire. This bird seems to have been overlooked by ornithologists. It may have increased its numbers and spread northward since its discovery in this country by Montagu. Having looked over the family of the Buntings in a new ornithological work by Mr. Howard Saunders, I find that the Cirl Bunting (*Emberiza cirlus*) has by chance been obtained in Norfolk, the Midland Counties, and it is said to be of accidental occurrence in Yorkshire. If so, I must say that it is for want of closer observation. At Lofthouse, about the middle of May, 1882, hearing the song of a Bunting which drew my attention by its being peculiar, I soon found out that its song was different, both in tone and variation, from either the Corn Bunting (*E. miliaria*) or the Yellowhammer (*E. citrinella*). By the aid of the field-glass, the site was discovered where the building operations were going on, and on May 31st, I visited that site, and found the nest built in the fronds of a Lady Fern (*Asplenium filix-fœmina*) about a yard from a hedge, and six inches from the ground, containing three eggs. Again, on May 6th, 1889, at Low-Laithes-Lane, near Flushdyke, Ossett, I had the opportunity of finding another containing four eggs, built in a very thick bushy thorn, two feet from the ground, so well concealed that had not the bird flown from its nest, it would not have been detected. Nest not so slovenly built as its congener the Yellowhammer, but deeper, and more cup-shaped, and rather more moss intermixed, lined with a good quantity of small fibres, fine grasses, and hair. Eggs of a muddy pinkish-white, with blotches of a dark chocolate colour, with a few hair-lines springing generally from the blotches. I may say that the eggs have been seen and verified by Mr. Geo. Parkin of Wakefield.—JOHN WARD, Pymont House, Lofthouse, March 21st, 1890.

The Cirl Bunting has been casually observed in Yorkshire from localities between Doncaster in the south to Richmond in the north, and it is said to have nested near Huddersfield. In the above communication we regret to observe that no mention is made of the bird, the most, perhaps the only, satisfactory means of identifying the ownership of the nests and eggs discovered.—W. E. C.

A NEW ENTOMOLOGICAL JOURNAL.

'The Entomologists' Record and Journal of Variation.' Edited by J. W. TUTT, F.E.S.

We have received the first number of this Journal, which is based a good deal on the lines of the 'Entomologist.' A characteristic, however, distinct from either of the two London entomological journals is that it is to be devoted entirely to British Entomology, and being such, if kept up to the standard of the first number, we think it likely to be a success; for although our insular prejudices cannot be defended on many logical arguments, the fact remains that comparatively few British entomologists—or more strictly speaking, collectors—care anything whatever for any insect taken outside the boundaries of the British Islands. And as a rule (there are of course many worthy exceptions) by the time they have become educated to a point beyond this, they begin to lose interest in entomology altogether.

As the name of the journal implies, a special feature is to be the prominence given to papers and notes on 'Variation,' the interest in which has so much increased of late years, the impetus being due in great measure to the writings of the editor of the journal under notice. Other good features are the 'Scientific Notes,' the 'Current Notes,' the 'Notes on Collecting,' the 'Practical Hints,' etc. The journal, published on the 15th of every month, at a subscription of six shillings a year, is well worthy of support, and we heartily wish it every success.—G.T.P.

NOTE—BIRDS.

Flamborough Notes: Arrival and Departure of Birds.—February 22nd, several pairs of Stonechats (*Pratincola rubicola*) arrived on the headland. March 1st, I observed the Pied Wagtail (*Motacilla lugubris*). March 30th, when taking a walk from the village to the lighthouse, I also observed a pair of Wheatears (*Saxicola œnanthe*) which, no doubt, had just arrived, and strange to say, a swarm of Crested Wrens (*Regulus cristatus*) were in the woods and on the hedge-rows on the same date; whether they had arrived or were taking their departure, I am not able to state; they were seen some two or three days. April 6th, Easter Sunday, I saw a great number of Hooded Crows (*Corvus cornix*) on the headland, waiting for a favourable opportunity before taking their departure.—MATTHEW BAILEY, April 8th, 1890.

NOTE—GEOLOGY.

Exposure of Lower Lias at Redcar.—In the 'Yorkshire Lias' (Tate and Blake), page 65, the authors say 'the hard stone bands of the *Bucklandi* series without doubt form the ridge on which the towns of Redcar and Coatham are built, but of this we have no positive evidence.' The evidence appeared last week. On Tuesday, April 8th, there was a storm, and great tide at Redcar, and the sand and stones masking the low cliff at the East end of Redcar were entirely swept away. Several feet of lias, in position, full of *Gryphæa arcuata* were shown at the base of the cliff. On the lias rested a few feet of red boulder clay. A huge sandstone boulder appeared in the clay, resting on the top of the lias. Above the clay was a section of sand, containing cockles and periwinkles.—W. C. HEY, St. Olave's Vicarage, York, April 14th, 1890.

THE BIRDS OF OXFORDSHIRE.

The Birds of Oxfordshire. By O. V. Aplin. With a Map and Plate. Oxford: Clarendon Press. 1889.

Mr. Aplin's 'Birds of Oxfordshire' is a welcome addition to the ranks of our faunal literature, and is a satisfactory production, worthy of hearty recommendation. We are especially glad to note that Mr. Aplin has fully realised what naturalists really want in and expect of a county avifauna, and has not trenched upon the domain of what should appertain to a text-book on British birds. He tells us just what we desire to know about Oxfordshire and its birds, while he also gives interesting notes on their habits.

It is thought, however, since Mr. Aplin is evidently a believer in the specific distinctness between *Linota linaria* and *L. rufescens*, that he would be quite justified in adding the Mealy Redpoll to his list of Oxfordshire birds on the evidence he himself adduces at p. 95, where he tells us that 'the large light-coloured race of Redpolls has occurred in Oxfordshire, and some were in the hands of an Oxford bird dealer in the winters of 1879-80 and 1880-81.' We have certainly never heard of a large light-coloured race of *L. rufescens*, and the occurrence of such-to-be-described birds in winter, leaves, it is thought, no doubt as to their identity with *L. linaria*.

There is a good description of the county and its ornithologists; and it is needless to say that the book is well got up. We do not much like the plate, nor can we say that we are inclined to think its subject—the Alpine Chough—is altogether free from the suspicion that it may not find its way into this country unaided.—W.E.C.

NOTE—ENTOMOLOGY.

Entomological Exhibition at Alford, Lincs.—At the Alford Flower Show on the 13th of August, 1889, members of the Society had a special tent in which Mr. Robert Garfit exhibited his magnificent collection of insects, principally Lepidoptera, both English and exotic, besides larvæ of various moths feeding on their proper food plants. The local rarities included a specimen of the Clifden Nonpareil (*Catocala fraxini*) taken at Hogsthorpe, the only example ever found in this neighbourhood; Clouded Yellow (*Colias edusa*) taken at Alford; Greasy Fritillary (*Melitæa artemis*), very local, bred from larvæ taken at Ailby, feeding on the Scabious (*Scabiosa succisa* Linn.); Marbled White (*Melanargе galatea*), very local, taken at Well; Large Tortoise-shell (*Vanessa polychloros*), bred from larvæ taken at Alford, feeding on the Drooping Willow; Camberwell Beauty (*V. antiopa*) taken at Louth; Death's Head Hawk Moth (*Acherontia atropos*), larvæ, pupæ, and imagos, taken at Alford; Convolvulus Hawk Moth (*Sphinx convolvuli*) taken at Alford; Bedstraw Hawk Moth (*Deilephila galii*) taken at Alford; and the Dark Tussock (*Dasychira fascelina*) bred from larvæ taken at Mablethorpe, feeding on the Sea-Buckthorn (*Hippophae rhamnoides* Linn.). The President exhibited his collection of British Hemiptera-Heteroptera, *Dicyphus constrictus* Bohemann, being the rarest, having been taken by him on two occasions at Well, but elsewhere in Great Britain only by Dr. Buchanan White at Perth. Mr. Mason also exhibited, in their various stages of development, with examples of damage done, a numerous selection of insects injurious to gardens and the farm, among these being the Hessian Fly, with plants of wheat and barley injured by it.—Joseph Burtt Davy, Hon. Sec., October 1889.

MICROSCOPIC FAUNA AND FLORA OF MARKINGTON, MID-WEST YORKSHIRE.

Rev. J. STANLEY TUTE, B.A.,
Vicar of Markington, near Ripley.

The following is a list of the animals and vegetables—Infusoria and Algæ—which I have found in and now record for the Markington district. There are some other Algæ, which I have not identified. Those which I have mentioned do not by any means always occur, e.g., I have only once found the *Volvox globator*, and then it was abundant. I think the same year or the year following the farmer in whose field the pond containing the *Volvox* was, cleaned it out, and so destroyed any prospect of a second growth of plants. One year the mill-race was filled with the long filaments of *Spirogyra*; in the following years they have not occurred there, though they are common in many of the pools elsewhere. Above a certain by-wash the Diatomaceæ are more various and beautiful than they are below. So there is a chance of disappointment or of unlooked-for success. Still, these I have set down have undoubtedly existed here, and future searchers may find, I dare say, many new forms.

The plant I mentioned as rare, viz., *Ophiocytium majus*, is mentioned in the 'Micrographic Dictionary' as a genus of unicellular Algæ, of which several species are described not yet noticed in Britain (Bibl. Nägeli). I think, too, that there are two species of *Vaucheria*, though I have named only one.

The more common Infusoria I have not mentioned; only the rarer kinds. There are more species of the Rotatoria, a Water Bear, and Entomostraca, which are common, but except *Daphnia pulex* and *Cyclops quadricornis*, I have not identified any.

ANIMALS.

Amœba diffluens. Markington.

Actinophrys viridis. In pools of stagnant water near farms, Markington.

Distigma viride (?). Markington.

Arcella vulgaris. Markington Beck.

Arcella aculeata. Do.

Dileptus folium. Markington.

Stentor polymorphus. Ditch, with clear water, but not flowing, Markington (Westerns Pasture).

Vorticella microstoma. Stagnant water, Markington.

Ophridium versatile. Eavestone Lake (now drained) and river Skell. The colonies in the river evidently came from the lake, and it would be hopeless to search for them.

Cothurnia imberbis. Mill-pond, above the Shaw Mill; pond, Bishop Thornton.

Floscularia ornata. In another clear-water ditch, Markington (Westerns Pasture).

Vaginicola crystallina. Mill-pond near Shaw Mills, Bishop Thornton.

Epistylis anastatica. Markington.

Loxodes bursaria. Pools of water in a quarry of Gritstone, Spa Gill, about a mile west of Fountains Abbey.

Hydra viridis. Pond near Morcar.

Rotifer vulgaris. Markington.

Squamella oblonga. Do.

Pterodina patina. Do.

Anurœa curvicornis. Do.

Notommata centrura. Do.

Spongilla fluviatilis. In the stream near the Rectory, Ripley; abundant.

Paramecium aurelia.

Peridinium cinctum.

VEGETABLES.

Chlamidomonas pulvisculus. Stagnant water, Markington. Where this has occurred, the dried-up surface of the ditch is afterwards frequently covered with moss.

Euglena viridis. Stagnant water, Markington.

Tetraspora gelatinosa. Roadside pool, Ingerthorpe, at the point where it is fed on the N. end by a ditch.

Palmella cruenta. Markington.

Protococcus viridis (red state). Gordale Scar, in rock pools. Gordale Scar is, of course, not in the neighbourhood of Markington, but it may be useful to mark its occurrence in a place so well known.

Gonium pectorale. Small pond in a meadow, Wallerthwaite.

Pandorina morum. Do., do., do.

Volvox globator. Do., do., do.

I have only found *Volvox* once, then it was abundant. *Pandorina* I found more frequently. The pond was cleaned out, and I have found neither since.

Oscillatoria autumnalis. Markington.

Cylindrospermum catenatum. Markington.

Phacus longicauda. Markington.

Œdogonium braunii. In the pond at Morcar.

Closterium lunula. In ponds and the beck, caught in the interstices of moss, etc., growing on stones. When the water is squeezed out of the moss, the out-flowing dirty water contains many Desmids and Diatoms, which appear after a time when the water is placed in a vessel in the light.

Closterium acerosum. Do., do.

Closterium griffiithsii. Do., do.

Closterium setaceum. Do., do.

Cosmarium botrytis. Do., do.

Hyalotheca desiliens. At the source of Markington Beck.

Euastrum oblongum. Do., do.

Desmidium swartzii. Do., do.

Ankistrodesmus falcatus. With the *Closteria* and *Cosmarium.*

Scenidesmus obliquus. Do., do.

Scenidesmus quadricauda. Do., do.

Staurastrum margaritaceum. Do., do.

Pediastrum boryanum. Do., do.

Nostoc commune. In clear still pools, Markington.

Batrachospermum moniliforme. Do.

Melosira varians. In streams and small shallow ponds.

Spirogyra quinina. Suddenly appeared one year, and filled the mill-race with filaments about five or six feet long, but this has not occurred since.

Spirogyra nitida. In streams and small shallow ponds.

Zygnema cruciata. Do., do.

Mesocarpus scalaris. In clear running water, in troughs, etc., High Birstwith.

Ulothrix zonata? Do., do.

Cladophora glomerata. Markington Beck and Mill-race.

Chœtophora elegans. Do., do.

Ophiocytium majus. This rare plant is found at Aldfield, in a pond lying in the angle made by the Ripon and Pateley Bridge Road, and the road from the village of Aldfield. (See Micrographic Dictionary, Ophiocytium).

Vaucheria cæspitosa. In a watering-trough, Cayton, Cayton Gill Farm. Another species (I think) is common.

Draparnaldia glomerata. Running water. Markington.
Cocconema lanceolatum. Do.
Achnanthes exilis. Do.
Odontidium mesodon. Found in the Ure, Uredale.
Tabellaria flocculosa. Do., do.
Surirella, species. Markington Beck.
Gomphonema truncatum. Do.
Denticula obtusa. Do.
Campylodiscus costatus. Do.
Cocconeis pediculus. Do.
Homœocladia anglica. Markington Beck.
Pinnularia Do.
Sphinctocystis elliptica. Do.
Sphinctocystis solea. Do.
Nitzschia sigmoidea. Do.
Gyrosigma attenuatum. Do.
Gyrosigma acuminatum. Do.
Cymbella gustroides. Do.
Diatoma vulgare. Markington Beck. A much smaller variety, South Stainley.
Bacillaria elongata. Markington Beck.
Fragillaria capucina. Do.
Synedra ulna. Do.
Synedra splendens. Do.
Meridion circulare. Mouth of drains, road-side, Markington.
Encyonema paradoxum. How Hill.
Amphora ovalis. Markington.

There are many Entomostraca in the ponds, *Daphnia pulex*, *Cyclops quadricornis*, *Cypris*, etc., etc., but I have not worked at this section. There are many Rotatoriæ, especially in water which is not very pure. Water-bears also occur in the mossy tufts in water.

There seems to me to be a considerable difference between the fauna and flora of Shaw Mill Beck and Markington Beck. Perhaps this is owing to the fact that Shaw Mill Beck flows over Millstone Grit and its derivatives, Markington Beck over Millstone Grit, Boulder Clay, and then over Magnesian Limestone.

Above the little weir which turns the water to the upper mill, the stream is far richer in *Diatomaceæ* than it is below. Cray-fish (*Astacus fluviatilis*) are found in the Shaw Mill Beck, but not here; they are also found in the river Skell.

SOME FURTHER NOTES ON THE TREE SPARROW.

F. B. WHITLOCK,
Attenborough.

I AM well rewarded for my notes on the Tree Sparrow (*Passer montanus*) by their having drawn from the Rev. H. A. Macpherson his further contribution to the life-history of this species.

My observations as to the social habits of this species tend rather to prove exclusiveness than fraternity with its near ally or with the Greenfinch. This latter bird is very common with us at all times, but I usually find it in company with the Chaffinch or House Sparrow. Several facts incline me to the belief that our local Tree Sparrows are migratory. In the first place, I can find no traces of them in the winter either round farm-houses or in the country-lanes. In the winter of 1888 I wanted one or two for skinning, and though I shot at any Sparrow that looked at all likely, I only picked up House Sparrows. Up to this date I have not detected it in the flocks of Sparrows that frequent the September stubble-fields, though it should turn up there if anywhere. Since writing my first notes I have seen three Tree Sparrows amongst some dozens of House Sparrows killed about six miles below Nottingham in the Trent valley. In the second place, I find it varies greatly in numbers from year to year during the breeding-season.

My boyhood was spent on the borders of Nottinghamshire, where the pollard willow abounds. I used to find a nest or two most years, but never found it breeding commonly. I have been in close correspondence with an ornithological friend in the neighbourhood ever since leaving home, and his experience tallies with mine. Last year, however, he writes, 'I have found no nests so common as those of the Garden Warbler and Tree Sparrow.' I do not think mild winters would account for such a large increase in the numbers of this species.

I am sorry to say that I have not heard the song of the Tree Sparrow. Observing it principally at its nesting-colony, I am afraid I am treated rather to abuse than song. Whenever I have wanted any eggs my plan has been to row gently down the canal in my boat, and quietly as I go, the Tree Sparrows are off before I can exactly note the site of the nest. They usually fly to some thick hawthorns, where they keep up an angry chatter, which was well described one day by a passing politician as 'Parliament had met.'

It is quite characteristic of the species to make a dash for liberty as Mr. Macpherson describes. As to their laming themselves, the

explanation occurring to me is that the angle of the body to the direction of the bird's flight is greater in Sparrows than in the longer winged species; consequently, when a collision occurs, the legs are likely to be protruded and to bear part of the shock.

At the risk of making my paper too long, I should just like to quote a few passages from Mr. Seebohm's 'Siberia in Europe' as to the flocking together of the two species:—'. . . At Vologda we were under the impression that they were all the House Sparrow. In the villages through which we passed after the first day they were certainly all Tree Sparrows . . . (Archangel). Once or twice we identified a Tree Sparrow, but by far the greater number were the common House Sparrow. . . . As we proceeded further east Sparrows were less plentiful, but we noticed both species . . . in the villages we saw a few Tree Sparrows . . . (Ust Zylma). At this time we ascertained positively the presence of a bird which we had long suspected to be on the roof of the Preestaff's house—a no less important bird than the common Sparrow. This is an extraordinary instance of the extreme localness of birds. We never by any chance saw the common Sparrows among the Tree Sparrows. . . . During the week there had apparently been an arrival of House Sparrows, for they abounded in M. Znaminski's (the Preestaff) yard. Strangely enough, we could not meet with any in other parts of the town.'

In conclusion, I should like to ask the readers of the 'Naturalist' 'Have they found the House Sparrow ever breeding in a *hole* in a pollard willow or other tree?' I never have. This seems to be one of the few differences in habit between the two species. I once found the Tree Sparrow breeding in a nest of the long-suffering House Martin.

NOTES AND NEWS.

Among the recently-elected Fellows of the Linnean Society we note the name of Mr. Edgar R. Waite, sub-curator of the Leeds Museum.

We trust our readers will again make observations (and let us have their notes for publication) on the question as to whether Starlings are double-brooded or not, concerning which so many interesting notes were printed last year in our journal. Mr. Riley Fortune, F.Z.S., has also suggested that observations be made with the view of ascertaining whether Starlings pair for life or not.

In the early months of 1889 the Huddersfield Naturalists' Society adopted a most excellent method of stimulating natural history work among their members by publishing monthly a small-sized four-page circular giving the proceedings of their previous meeting, and also numerous natural history notes of more or less (generally more) interest, and giving announcements as to the Society's proceedings and programme for the following month, and sometimes in addition useful hints as to 'What to Observe.' We were much pleased with the first five numbers, but have not seen any since last July.

THE LICHENS OF WESTMORLAND.

JOSEPH A. MARTINDALE,

Staveley, near Kendal, Westmorland.

172. **Lecanora murorum** (Hoffm., En., p. 62, tab. 9, fig. 2); Nyl. in Flora, 1883, p. 106; *Placodium* Leighton, Lich. Flora, 3rd ed., p. 160 pro parte; vide 'The Naturalist,' 1887, p. 358.

On limestone walls. Kendal, Shap, Heversham; not abundant at any of these places.

173. ***Lecanora decipiens** (Arn. in Flora, 1866, p. 529); Nyl. in Flora, 1883, p. 106; Leighton, Lich. Flora, p. 161; vide 'The Naturalist,' 1887, p. 359.

On limestone walls at Shap and also near Kendal. The plants gathered in these places are not typical.

174. **Lecanora tegularis** (Ehrh., Exs., 304; Hoffm., Flora Germ., p. 158;) Nyl. in Flora, 1883, p. 106. *Placodium miniatum* Leighton, Lich. Flora, 3rd ed., p. 162 pro parte; vide 'The Naturalist,' 1887, p. 360.

On stones of all sorts. Distributed generally through the county. I have it in my herbarium from Sandside, Kendal, Staveley, Shap, Tirril, and Lowther Park.

175. **Lecanora cirrochroa** Ach., Syn., p. 181; Nyl., Lapp., p. 126; Leighton, Lich. Flora, 3rd ed., p. 161; vide 'The Naturalist,' 1887, p. 362.

On limestone rocks. Arnbarrow, Haverbrack, Milnthorpe, and Levens Park. Always barren. Some specimens approach *L. obliterans* Nyl. in Flora, 1874, p. 7.

176. **Lecanora sympagea** (Ach., Prod., p. 105); Nyl. in Flora, p. 197. *Placodium murorum* Leighton, Lich. Flora, 3rd ed., p. 160 pro parte; *P. callopismum* var. *plicatum* and var. *sympageum* Leight., l.c. p. 162; vide 'The Naturalist,' 1887, p. 363.

Common on limestone walls and rocks. Very abundant on rocks at Sandside and Arnside, and found generally distributed wherever there is limestone.

177. **Lecanora xantholyta** Nyl. in Flora, 1879, p. 361, and 1883, p. 107. Vide *The Naturalist*, 1887, p. 364.

On limestone rocks. Scout Scar, Whitbarrow, Haverbrack (covering a large extent of rock), and near the river Lowther in Lowther Park.

Perhaps, as an imperfect plant, this and *Leproloma lanuginosum* ought to be relegated to an appendix; but there can hardly be a doubt that *L. xantholyta* is a state of some *Lecanora*.

D. Group of *L. cerina* (*Callopisma*).

178. **Lecanora citrina** (Hoffm. Flora Germ., ii, p. 198); Ach., Syn., p. 176; *Placodium* Nyl., Scand., p. 136; Leighton, Lich. Flora, 3rd ed., p. 163.

On limestone walls and on mortar. Milnthorpe, Kendal, etc.

179. **Lecanora flavocitrina** Nyl., Flora, 1886, p. 461; 'The Naturalist,' 1886, p. 374.

On walls of clay slate at Staveley and at Crosthwaite.

180. **Lecanora aurantiaca** (Ach., Prod., p. 44; Meth., p. 69; Lich. Un., p. 204; Syn., p. 50). Nyl., Scand., p. 142 pro parte; Leighton, Lich. Flora, 3rd ed., p. 206—only as regards var. *salicina*. *L. salicina* (Ach., Prod., p. 43; Meth., p. 173) ejusdem Lich. Un., p. 400; Syn., p. 175.

Not very common. On ash-tree roots, Beathwaite Green, in Levens Park and in Lowther Park; the plants from these places are the form *Lecanora salicina*. On trees near Kendal; this is the form *Lecidea aurantiaca* of Ach., Meth., etc.

181. **Lecanora crenulatella** Nyl. in Flora, 1886, p. 462; vide 'The Naturalist,' 1886, p. 374.

On limestone at Sandside.

182. **Lecanora erythrella** (Ach., Prod., p. 43, Meth., p. 174); ejusdem, Lich. Un., p. 401; Syn., p. 175; *L. aurantiaca* v. *erythrella* Nyl., Scand., p. 142; Leighton, Lich. Flora, 3rd ed., p. 207; *Callopisma flavovirescens* (Wulf.); Arn., Lich. Frank. Jura, p. 85.

On sandstone near Cliburn; near Tirrill; and at Shap. On limestone near Brigsteer.

Wulfen's name *flavovirescens*, if it really belong to this plant, is older than that given by Acharius.

183. **Lecanora ferruginea** (Huds., Flora Angl., ed. i, p. 440, ed. ii, p. 526); Nyl., Scand., p. 143 pro parte; Leighton, Lich. Flora, 3rd ed., p. 208, excl. vars. *scotoplaca*, *concilians*, and *fusco-atra*. *L. crenularius* With., Arr., 3rd ed., iv, p. 32.

The corticolous or typical form I only remember to have once seen in Levens Park, but the saxicolous states are common on the sandstone and slate. Most of them belong to the var. *festiva* of Nyl. Of this variety I have gathered the

form *crenularia* of Withering on sandstone in Lowther Park and near Cliburn. A rather remarkable form occurs on sandstone near Tirrill, in which the apothecia as they increase in size grow darker in colour, and at length become a full black and immarginate, then bearing a great resemblance to some *Lecidea* of the *contigua* group.

184. **Lecanora ferruginascens** Nyl., Flora, 1872, p. 427; Pyr. Or., p. 6.

On clay slate near Staveley; only gathered once.

I publish this lichen with some hesitation, as I have never seen an authoritative specimen of the Pyrenæan plant, and I have too little of my own to send any of it away for confirmation. It, however, seems to agree perfectly with Dr. Nylander's description.

[**Lecanora fusco-atra** (Bayrh.; Nyl., Scand., p. 143); Flora, 1872, p. 427; Pyr. Or., p. 6.

I have gathered this plant in the Isle of Man on the coast to the north of Douglas, but have not met with it in Westmorland].

185. **Lecanora cerina** (Ehrh., exs. No. 216; Hoffm., Flora Germ., ii, p. 179); Ach., Lich. Un., p. 390; Syn., p. 173; Nyl., Scand., p. 144; Leighton, Lich. Flora, 3rd ed., p. 209.

Not common. On trees in Lowther Park. On ash near Beathwaite Green and in Levens Park.

Var. **stillicidiorum** (Horn). On mosses, Cunswick Scar.

186. **Lecanora cerinella** Nyl. in Flora, 1872, p. 427; Pyr. Or., p. 7.

On a tree near Barbon. I have only a very small specimen containing about a dozen apothecia.

187 **Lecanora steropea** (Ach., Lich. Un., p. 404; Syn., p. 175); Lamy, Cat. Lich. Mont Dore, p. 60, et ejusdem Lich. Caut., p. 44.

On walls at Staveley. The species was determined for me by Dr. Nylander.

188. **Lecanora pyracea** (Ach., Meth., p. 176; Lich. Un., p. 207; Syn., p. 49); Nyl., Scand., p. 145 pro parte; Leighton, Lich. Flora, p. 211 pro parte.

I do not remember ever gathering the type in Westmorland, though very probably it occurs.

Var. **pyrithroma** (Ach.) non Leighton.

On limestone, here and there to the south of Kendal, and on Whitbarrow.

VAR. **picta** (Tayl., Flora Hib., ii, p. 130) = **pyrithroma** Leight., op. cit., p. 212.

On clay slate near Staveley, rather common. My plant, specimens of which have been seen and determined by Dr. Nylander, must, I suppose, be regarded as a state only of Taylor's lichen. In general appearance it agrees with Taylor's description, but when closely examined with a lens there are several discrepancies. In particular, the bright yellow *pruina* of the apothecia is entirely absent, and the margin is not such as he describes.

189. **Lecanora luteoalba** (Turner in Trans. Linn. Soc., vii, p. 92, fide Stizb., Lich. Helv., p. 99). Lamy, Cat., p. 62.

On elm in Levens Park. The only Westmorland specimens in my herbarium at the present time were gathered on a fine elm at the entrance to Levens Park, which has since been cut down. This tree was, for a large extent, almost completely covered with the lichen in very fine condition.

190. **Lecanora vitellinula** Nyl., Lapp. Or., p. 127; Flora, 1863, p. 305. *Lecanora aurantiaca* v. *inalpina* Leighton, Lich. Flora, 3rd ed., p. 207, at least pro parte.

On limestone rocks and walls. Very abundant to the south of Kendal. The walls near Beathwaite Green and Levens are covered with a thin badly developed form in thin ochraceous patches, some of them of large extent. At Haverbrack the plant is better developed with larger apothecia. Near Arnside a very handsome form of it occurs with a pale whitish-yellow continuous thallus, sometimes almost evanescent, and pleasant yellow apothecia not so crowded as in the other forms. In this state it comes near to saxicolous forms of *L. pyracea*.

191. **Lecanora phlogina** (Ach., Meth., p. 180; Syn., p. 176, sub *L. xanthostigma*); Nyl., Scand., p. 141; Leighton, Lich. Flora, 3rd. ed., p. 213.

On trees in Levens Park. Only once gathered.

192. **Lecanora irrubata** (Ach., Prod., p. 75? Lich. Un., p. 206; Syn. p. 40); Nyl. in Lamy Lich. Caut., pp. 45 and 46. *L. rupestris* v. *rufescens* and v. *viridiflavescens* Leighton, Lich. Flora, 3rd ed., p. 204.

On limestone, probably not uncommon. In Mallerstang, near Cliburn and at Arnside.

No. 179. JUNE 1890.

THE NATURALIST:

A

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193. *Lecanora calva (Dicks. Crypt., ii, p. 18); Nyl., Scand., p. 147. *L. rupestris* var. *incrustans* et var. *calva*, Leighton, Lich. Flora, 3rd ed., p. 203.

On limestone, very common.

194. Lecanora candicans (Dicks. Crypt., iii, p. 15; *Placodium*, Nyl., Prod. Lich. Gall., p. 72; Leighton, Lich. Flora, 3rd ed., p. 164); Nyl., Flora, 1876, p. 306. Name only.

Common on the limestone to the south of Kendal at Haverbrack, Arnside, Brigsteer, etc. Also on limestone on the slopes of Wild Boar Fell in Mallerstang.

195. Lecanora tetrasticha Nyl. in Flora, 1874, p. 307; Leighton, Lich. Flora, 3rd ed., p. 224.

On limestone, Whitbarrow, Levens, Heversham Head. Very sparingly gathered.

[Lecanora chalybæa (Duf. in Fr.L.E., p. 125; *Placodium*, Nyl., Scand., p. 138; Leighton, Lich. Flora, 3rd ed., p. 165); Schär, Syn., p. 60.

There is little doubt that this plant will be found to occur on the hills bounding the east of the county, if not elsewhere in the district. I have gathered it on the Cross Fell range in Cumberland at a very short distance from our boundary.]

196. Lecanora albopruinosa (Arn. in Flora, 1859, p. 152; Nyl., Scand., p. 139, sub. *Placodio Agardhiano*, under which name Leighton also describes one form of it, Lich. Flora, 3rd ed., p. 165); Stiz. Lich. Helv., p. 101.

On limestone, here and there to the south of Kendal, as at Heversham Head, Scout Scar, etc. Very fine specimens are to be found near Arnside on rocks by the sea shore, associated with *Lecanora vitellinula*.

E. Group of *L. vitellina* (*Candelaria*).

197. Lecanora xanthostigma (Pers. in Ach. Lich. Un., p. 403; Ach., Syn., p. 176 pro parte); Nyl., Lapp. Or., p. 130.

On trees in Lowther Park. The barren thallus occurs rather frequently, but I have only once gathered it with apothecia.

198. Lecanora vitellina (Ehrh., exs. 155); Ach., Lich. Un., p. 403; Syn., p. 174; Nyl., Scand., p. 141; Leighton, Lich. Flora, 3rd ed., p. 166.

Very common on rocks and walls, and sometimes on wood. The varieties *corruscans* and *aurella* also occur somewhat frequently.

199. **Lecanora laciniosa** (Duf. in Fr. L. E., p. 73); Nyl. in Flora, 1881, p. 454. *L. candelaria*, Leighton, Lich. Flora, 3rd ed., p. 167. *Lichen concolor*, Dicks. Crypt., iii, p. 18.

Apparently very rare. I have only gathered it twice; once on apple-trees in an orchard at Beathwaite Green and once in Levens Park.

F. Group of *L. sophodes* (*Rinodina*).

200. **Lecanora sophodes** (Ach., Prod., p. 67; Meth., p. 155) ejusdem, Lich. Un., p. 357; Syn., p. 153, excl. varieties; Nyl., Flora, 1869, p. 412; Leighton, Lich. Flora, p. 214 pro minima parte.

Apparently rare. The only place in which I have found it is between Kendal and Helsington, on some stunted trees.

201. **Lecanora exigua** (Ach., Prod., p. 69; Meth., p. 154 pro parte); Nyl., Flora, 1873, p. 197, and 1874, p. 307; *Lecanora sophodes* v. *exigua*, Leighton, Lich. Flora, p. 214 (pro parte).

On trees in Levens Park and Lowther Park, and occasionally on stones in walls, as at Staveley. Probably generally distributed.

202. **Lecanora roboris** Duf. Hb.; Nyl., Flora, 1869, p. 412. *Lecanora sophodes* v. *roboris*, Leighton, Lich. Flora, p. 215.

Somewhat plentiful on trees in Levens Park and at Heversham Head. I think I have seen it also in Lowther Park, but I have no specimens from there in my herbarium.

[Other species belonging to this group which can hardly be entirely absent from Westmorland, though as yet I have not noticed them, are *Lecanora confragosa*, *L. milvina*, *L. atrocinerea*, and *L. bischoffii*. I have gathered *L. milvina* in the Isle of Man, and the Rev. W. Johnson records it from the neighbourhood of St. Bees.]

G. Group of *L. alphoplaca*.

203. **Lecanora circinata** (Pers. in Ust. Ann., vii, p. 25) Ach., Syn., p. 184; Nyl., Scand., p. 152; Flora, 1873, p. 18 note; Leighton, Lich. Flora, p. 179.

On limestone rocks near Kirkby Lonsdale, Sir J. E. Smith, fide Leighton, l.c.

H. Group of *L. subfusca*.

204. **Lecanora galactina** (Ach., Meth., p. 190) ejusdem, Lich. Un., p. 424; Syn., p. 187; Nyl., Lapp., p. 132; Leighton, Lich. Flora, p. 189.

On limestone walls and stones, Kendal, Milnthorpe, Arnside, Lowther Park, and Tirrill. Probably general on the limestone. A dispersed form of this species occurs, but I have not succeeded in finding the *Lecanora dispersa* of Persoon.

205. **Lecanora crenulata** (Dicks., Crypt., 3, p. 14) Nyl., Lapp., p. 181, note 2. *Lecanora hageni* v. *crenulata*, Leighton, Lich. Flora, p. 191.

On limestone walls and rocks at Kendal, Heversham, Lowther, and Tirrill. Probably general on the limestone.

206. **Lecanora subfusca** (Linn., Sp., 1609; Ach., Prod., p. 47; Meth., p. 167) ejusdem, Lich. Un., p. 393; Syn., p. 157, all pro parte; Nyl., Flora, 1872, p. 250; *Lecanora subfusca* v. *argentata* Leighton, Lich. Flora, p. 186 pro parte.

On trees of various kinds throughout the county.

207. ***Lecanora campestris** (Schär., Spic., p. 391; En., p. 75) Nyl., Flora, 1872, p. 354. *Lecanora subfusca* v. *argentata* Leighton, Lich. Flora, p. 186 pro parte.

Common on stones in walls, Ambleside, Windermere, Staveley, Kendal, Levens, Lowther, Tirrill.

208. **Lecanora pseudistera** Nyl., Flora, 1872, p. 354.

On stones in a wall at Staveley. A plant differing from the preceding species by its smaller spores and its more distinctly articulated paraphyses, as well as by other characters.

209. **Lecanora rugosa** (Pers. in Herb. Ach., Stizb. in Bot. Zeit., 1868, p. 891) Nyl., Flora, 1872, p. 250. *Lecanora subfusca* v. *rugosa* Leighton, Lich. Flora, p. 186.

On trees, Levens Park, Sedgwick, and Ambleside.

210. **Lecanora gangaleoides** Nyl., Flora, 1872, p. 354; Leighton, Lich. Flora, p. 189.

On rocks at Kirkstone Pass and on Red Screes.

211. **Lecanora chlarona** (Ach., Lich. Un., p. 397, Syn., p. 158); Nyl., Flora, 1872, p. 250; *Lecanora subfusca* v. *chlarona* Leighton, Lich. Flora, p. 188; *Lecanora subfusca* v. *pinastri* Schär., Spic., p. 390, En., p. 74.

Apparently generally distributed on firs throughout the county—Staveley, Ambleside, Kendal, etc. All my Westmorland specimens are of the form *pinastri* of Schärer, which Dr. Nylander regards as belonging to *L. chlarona*. Leighton joins this form to *Lecanora coilocarpa*, Lich. Flora, p. 186.

212. **Lecanora coilocarpa** (Ach., Lich. Un., p. 393, Syn., p. 157; Nyl., Scand., p. 160) Nyl. in Lamy, Cat. Lich. Mont Dor., p. 72. *Lecanora subfusca* v. *coilocarpa* Leighton, Lich. Flora, p. 186, pro parte.

On clay-slate stones in walls at Staveley. I have not gathered the corticolous form.

213. **Lecanora intumescens** (Rebent., Flora Neomarch., p. 301, fide Stizb., Lich. Helv., p. 112) Nyl., Flora, 1872, p. 250; Lamy, Cat. Lich. Mont Dor., p. 73; *Lecanora subfusca* v. *intumescens* Leighton, Lich. Flora, p. 186.

On trees near Ambleside. My specimens are not well developed, and I was for a considerable time in much doubt whether they could rightly be referred to this species, which, in general, is easily recognisable. Some time since, however, I received a number of continental specimens among which were some exactly like the plant from Ambleside.

214. **Lecanora glaucoma** (Hffm., Flora Germ., ii, p. 172; Ach., Prod., p. 56; Meth., p. 160) Ach., Lich. Un., p. 362; Syn., p. 165; Nyl., Scand., p. 159; Leighton, Lich. Flora, p. 204.

On clay-slate stones in walls near Heversham and near Staveley, not common. The specimens from Heversham are infested with the parasitic *Arthonia varians* (Dav.). I have a form gathered near Lazonby in Cumberland which differs very much in aspect from any that I am acquainted with, but agrees in chemical reaction, and in all essential characters.

[**Lecanora subcarnea** (Sw., Ach.) Nyl., Flora, 1873, p. 69; Leighton, Lich. Flora, p. 205.

This species will most likely be found to occur in Westmorland, though I have not hitherto noticed it. I have gathered it, however, near Keswick in Cumberland].

215. **Lecanora umbrina** (Ehrh., Pl. Crypt., 245) Nyl., Lich. Scand., p. 162; Leighton, Lich. Flora, p. 191, exclude varieties.

On stones and walls. None of my Westmorland specimens are really typical.

[**Lecanora prosechoides** (Nyl. in Crombie's Lich. Brit., p. 51) Nyl., Flora, 1872, p. 250. *Lecanora umbrina* v. *prosechoides* Leight., Lich. Flora, p. 191.

Common on the east coast of the Isle of Man, but I have seen no Westmorland specimens].

DIPTERA FROM THE ALFORD DISTRICT OF LINCOLNSHIRE.

JAMES EARDLEY MASON,
The Sycamores, Alford.

THE following is a list of some of the flies taken casually by me in the year 1888, and identified by Mr. G. H. Verrall. Others were rendered impossible of accurate identification by having been carded with gum, like beetles, and the whole series examined thereby made exceedingly awkward to deal with. My indebtedness to Mr. Verrall is consequently tinged with compunction at my having trespassed so largely on his kindness. No one in the county studies the Diptera, to my knowledge. Would it were otherwise.

This list is an addition to that which appeared at pp. 217 and 218 of 'The Naturalist' for July, 1888.

Acnemia nitidicollis Mg.? Alford; 3rd August, 1888.
Macrocera fasciata Mg. Well; 25th June, 1888.
Ceratopogon bipunctatus L. Chapel; 31st July, 1888. Mablethorpe; 12th August, 1888.
Ptychoptera albimana F. Well; 20th October, 1888.
Limnobia tripunctata F. Well; 27th June, 1888.
Pachyrrhina histrio F. Alford; 8th August, 1888.
Pachyrrhina quadrifaria Mg. Alford; 8th. August, 1888.
Tipula lutescens F. Alford; 23th June, 1888.
Leptis tringaria L. Well; 12th August, 1888.
Philonicus albiceps Mg. Chapel; 31st July, 1888.
Empis tessellata F. Well; 16th June, 1888.
Empis stercorea L. Well; 25th June, 1888.
Tachypeza nubila Mg. Chapel; 23rd July, 1888.
Tachista arrogans L.? Chapel; 23rd July, 1888.
Tachydromia bicolor F.? Well; 16th June and 23rd August, 1888.
Dolichopus trivialis Hal. Well; 25th June, 1888.
Argyra argyria Mg. Chapel; 31st July, 1888.
Chilosia flavimana Mg. Well; 16th June, 1888.
Leucozona lucorum L. Well; 10th and 16th June, 1888. Chapel; 31st July, 1888.
Platychirus manicatus Mg.? Alford; June, 1888.
Syrphus bifasciatus F. Well; 10th June, 1888.
Volucella bombylans L. Well; 10th June, 1888.

Eristalis intricarius L. Chapel; 31st July, 1888.
Thelaira leucozona Pz.? Mablethorpe: 18th August, 1888.
Sarcophaga carnaria L. Alford: 20th August, 1888.
Calliphora erythrocephala Mg. Chapel: 31st July, 1888.
Stomoxys calcitrans L. Alford, June, 1888.
Hyetodesia flaveola Fln. Well; 25th June, 1888.
Anthomyia radicum L. Chapel; 31st July, 1888.
Homalomyia canicularis L. Mablethorpe: 26th August, 1888.
Lispe tentaculata Dg. Chapel; 31st July, 1888.
Sciomyza albocostata Fln. Well: 16th June, 1888.
Titanocera punctulata Scop. Well: 25th June, 1888.
Ptilonota centralis F. Well; 16th June, 1888.
Seoptera vibrans L. Alford; 5th July, 1888.
Acidia heraclei L. Thoresthorpe; 4th June, 1888.
Spilographa zoë Mg. Alford; 8th June, 1888. Well; 10th June, 1888.
Sepsis nigripes Mg.? Ailby; 17th October, 1888.

Besides these, the following pests have been very abundant both in 1888 and 1889:—

Cecidomyia destructor Say (Hessian Fly).
Hylemyia coarctata Fln. (Wheat-bulb Maggot Fly).
Chlorops tæniopus Mg. (Ribbon-footed Corn-Fly).

24th March, 1890.

NOTE—FISH.

Lamprey at Flamborough.—On the 3rd of May Mr. Matthew Bailey sent me a good-sized example of the Lamprey (*Petromyzon marinus*) which had been taken by Bielby Woodhouse, fisherman, of Flamborough that same morning. He was out long-line fishing about six or seven miles south-east of the Headland, and had taken several Cod. When taking hold of a very large Codfish he saw this strange fish in the Cod's mouth. It appears that the fish was quite strange and unknown to the fishermen of Flamborough, in whose experience (and Mr. Bailey's) it had never occurred before. Mr. Edgar R. Waite, F.L.S., of the Museum here, and I, made out the fish to be a Lamprey, with Yarrell's description of which it agreed in every respect.—W. Denison Roebuck, Sunny Bank, Leeds, May 5th, 1890.

NOTE—BOTANY.

Geranium phæum in Littondale, Mid-West Yorkshire.—On May 20th I had the good fortune to find a fine plant of this rare flower in bloom. It is a very healthy plant, growing near to the stream at an elevation of about 650 ft. above the sea-level. As there is only one plant, for obvious reasons I refrain from giving the locality more definitely. But I shall be glad to show the blossoms, which I have pressed for my herbarium, to any botanist who may be travelling this way. It is interesting to find the plant in this dale, as Mr. Arnold Lees has no Wharfedale station for it in his 'Flora of West Yorkshire' and mentions 350 ft. as its highest range. It was found many years ago at Feizor near Clapham, which is about 15 miles from Arncliffe.—W. A. Shuffrey, May 21st, 1890.

NOTES ON THE STARLING.

RILEY FORTUNE, F.Z.S.,
President of the Harrogate Naturalists' Society.

Last year information respecting the breeding of the Starling (*Sturnus vulgaris*) was published in the columns of 'The Naturalist.' It is in the hope of getting a little more information about this common bird that these lines are penned.

Does the Starling pair for life? This is a question I should like settling with the help of the readers of 'The Naturalist.' For many years I have had Starlings under constant observation, and my opinion is that in a good many instances they do.

The hole in which the nest is built is never really deserted. When the young are ready to fly, the old birds and young disappear early some fine morning into the country, where they stay continually day and night for a few weeks. After that time the old birds return to the hole every day throughout the winter, and roost therein at night; they are occasionally accompanied by the young ones. If two broods are reared in a season, the parent birds stay a shorter time in the country with the first brood.

On a fine winter's day, the old Starlings are almost invariably to be found on the house-top, warbling and chirming out their peculiar song. On the approach of spring, if the young birds are still about, there are sure to be fierce combats for possession of the hole, as a rule resulting in the victory of the former tenants. Sparrows, too, often try to obtain possession, but *they* are soon evicted, being generally hauled out by the tail, very often the tail feathers and Mr. Sparrow parting company during the struggle. The quantity of tail-less Sparrows to be seen about during spring, proves that this is no uncommon occurrence.

Starlings are excellent mimics, and it would be interesting to have recorded the various calls they have been heard to imitate. I have heard them give perfect imitations of the cries of the following birds this spring:—Sparrow, Lapwing, Golden Plover, Yellow Hammer, Chaffinch, etc.

A year or two ago the shepherd in Haverah Park told me that Starlings were a regular nuisance to him; they imitated his whistle so closely that even the dogs were deceived. While he was relating this, we heard them at work, and the representation of the human whistle, as given by them, was perfect.

They are very quarrelsome birds. A dozen or two come regularly every day into our stable-yard for food. It is very interesting to

watch them; the first thing a new comer does, after flying over the stable and dropping down near the others with a curious tumbler-like flight, is to run at the nearest bird and give it a dig with its beak, and all the time they are there they are squeaking and fighting with one another in a most unfriendly way.

Starlings have increased wonderfully of late years in this district. They do an immense amount of good, and, so far as can be ascertained, *no harm at all*. The farmers and gardeners, for a wonder, seem to be unanimous on this point. The only fault to find with them is that they are too fond of usurping and occupying the nesting-holes of the Woodpeckers.

HARROGATE, 19*th April*, 1890.

BRITISH LAND AND FRESHWATER SHELLS.

Land and Freshwater Shells: an Introduction to the Study of Conchology. By J. W. WILLIAMS. ('Young Collector' Series. Swan Sonnenschein & Co., 1889.)

If any 'young collector' purchases this book with the hope that it will help him to collect, he will be sadly disappointed. The first four pages only are devoted to 'collecting and preserving slugs, etc.' Instead of figures of the various species, he will find anatomical diagrams of 'a segment of the radula of *Neritina*,' 'nervous system of *Haliotis*' (a sea shell, by the way), 'reproductive organs of *H. pomatia*,' etc.—all very well in their way, but not in a 'young collector's' way. For a tyro to read that 'Nalepa has found that in *Zonites algirus* the cells of this "epithelial organ" develop in spring . . . but after that they gradually atrophy, and, according to Longe and Mer, they are entirely wanting in the full-grown animal,' or that 'the trypsin of the secretion of the "mitteldarmdrüse" converts the proteids of the foodstuffs into peptones,' is, in our opinion, enough to make his researches end there; nor is there any glossary to this mass of technicalities, which takes up the bulk of the book—forty-four pages. Then comes a very fair description of the different shells, spoilt, however, by the specific names being placed awkwardly after them. The descriptions are further confused by the different standards of measurement—$\frac{2}{10}$ inch, $5\frac{1}{2}$ lines, 10 to 13 mm., occurring on the same page; and we are commonly treated to fractions such as $\frac{14}{25}$, $\frac{1}{37}$, $\frac{3}{50}$ of an inch. The book is well printed, and the matter interesting to students of molluscan anatomy, but *not* to a 'young collector.' The most useful part of the book is the Conchological Society's 'census.'—A.L.E.

Naturalist,

LINCOLNSHIRE LIMESTONE PLANTS.

Rev. WILLIAM FOWLER, M.A.,
Vicar of Liversedge, Yorkshire; Vice-President of the Yorkshire Naturalists' Union.

The plants included in the following list are those which grow on—

(1) The Chalk Wolds, between Barton-on-Humber and Burgh;

(2) The Inferior Oolite, between Winteringham-on-the-Humber and Stamford;

(3) The Lias Limestones, between Whitton-on-the-Humber and Grantham.

The Chalk Wolds are less productive than other Chalk districts, for two reasons—they are largely covered by Diluvial Drift, and are in a high state of cultivation.

The Lias Limestones, too, are throughout the greater part of their length overlaid by sands and clays, so that the soil does not consist of disintegrated Limestone, except in a few places.

All the rarer plants are found on the Inferior Oolite, and especially on its top bed, the Cornbrash, which is easily disintegrated by atmospheric agencies, and then forms a light Limestone soil.

A few Limestone plants are found on the Red Marls with Gypsum (or Sulphate of Lime) which occur in the Isle of Axholme, and these, as they are all found on the Limestone soils of the Chalk, the Inferior Oolite, or the Lias, are marked with an asterisk in *this* list, instead of being repeated as a *separate* one.

Anemone Pulsatilla.
Broughton. Ancaster.

Ranunculus parviflorus.
Britten's list.

Aquilegia vulgaris.
Broughton. Near Alford.

Berberis vulgaris.

Arabis sagittata.

Reseda lutea.

*Reseda luteola.

*Viola odorata.

Viola hirta.

Viola Reichenbachiana.

Cerastium arvense.

Hypericum hirsutum.

Hypericum montanum.
Broughton Wood.

*Malva moschata.

Linum perenne.
Britten's list.

Geranium sanguineum.
Broughton Wood.

Geranium pratense.

Geranium pyrenaicum.
Harlaxton.

Euonymus europæus.

Rhamnus catharticus.

Ononis spinosa.

Trifolium procumbens.

Anthyllis Vulneraria.

June 1800.

Astragalus Hypoglottis.
Broughton. Ropsley.
Astragalus glycyphyllos.
Whitton. Broughton. Uffington.
Hippocrepis comosa.
Broughton. Ancaster.
Spiræa Filipendula.
Appleby. Broughton. Lissington (Lees).
Rubus saxatilis. Broughton Wood. Gateburton, Gainsborough (Lees).
*Agrimonia Eupatoria.
Poterium Sanguisorba.
*Poterium officinale.
Rosa rubiginosa.
Broughton. Bytham.
Parnassia palustris.
*Bryonia dioica.
Bupleurum rotundifolium.
Britten's list.
*Sison Amomum.
Pimpinella Saxifraga.
Pimpinella major.
*Silaus pratensis.
Selinum Carvifolia.
Broughton Wood.
Peucedanum sativum.
*Daucus Carota.
Cornus sanguinea.
Viburnum Opulus.
Galium Mollugo.
Galium tricorne.
Asperula cynanchica.
Broughton. Ancaster.
Valeriana Mikanii.
Broughton Wood.
Dipsacus pilosus.
Morkery and Ponton Woods. Claxby Wood.
Scabiosa Columbaria.
Solidago Virgaurea.
Erigeron acre. Broughton.
Antennaria dioica.
Broughton.
Inula Conyza. Britten's list. Stainton-le-Vale (Lees).
*Senecio erucifolius.
Senecio campestris (tall form). Ancaster (Streatfeild).
Carlina vulgaris.
Carduus nutans.
Cnicus eriophorus. Corby.
Cnicus acaulis var. caulescens. Near Laughton.
Serratula tinctoria.
*Centaurea Scabiosa.
Cichorium Intybus.
Picris hieracioides.
Picris echioides.
Hieracium umbellatum.
Lactuca muralis.
Campanula glomerata.
Campanula Trachelium.
Chiefly on the Cornbrash.
Campanula latifolia.
Specularia hybrida.
Primula veris.
Ligustrum vulgare.
*Blackstonia perfoliata.
Gentiana Amarella.
*Cynoglossum officinale.
Lithospermum officinale.
Lithospermum arvense.
Echium vulgare.
Verbascum Thapsus.
Linaria Elatine.
Melampyrum cristatum.
Careby Wood.
Lathræa squamaria.
Well Vale (J. E. Mason).

Verbena officinalis.
Origanum vulgare.
Thymus serpyllum.
Calamintha Clinopodium.
Calamintha arvensis.
Salvia Verbenaca.
Kirton-in-Lindsey.
*Nepeta Cataria.
Marrubium vulgare.
Plantago media.
Plantago Coronopus.
Chenopodium polyspermum. Careby Wood.
Daphne Laureola.
Witham. Ashby-cum-Fenby.
Euphorbia amygdaloides.
Bourn and Uffington Woods.
Neottia Nidus-avis.
Ropsley Wood.
Orchis pyramidalis.
Orchis ustulata. Winterton.
Glentham (Lees).
Orchis Morio.
Orchis Mascula.
Aceras anthropophora.
Britten's list.
Ophrys apifera.
Broughton. Cockerington.
Ophrys muscifera.
Broughton Wood.
Habenaria conopsea.
Habenaria viridis. Ancaster.
Habenaria chloroleuca.
Broughton. Boothby.
Gateburton (Lees).
Iris fœtidissima.
Careby Wood.
Tamus communis.
Convallaria majalis.
Allium oleraceum.
Broughton Wood.
Colchicum autumnale.
Flixborough.
Paris quadrifolia.
Scirpus Caricis.
Pond-side, Broughton.
Carex muricata.
Carex divulsa. Bourn Wood.
Calamagrostis lanceolata.
Easton Wood.
Avena pubescens.
About Bishopbridge (Lees).
Koeleria cristata.
Melica uniflora.
Festuca rigida.
Brachypodium pinnatum.
Asplenium Trichomanes.
Owston Ferry.
Asplenium Ruta-muraria.
Owston Ferry. Sawcliffe.
Polystichum aculeatum.
Polystichum angulare.
Burwell Wood, Louth.
Phegopteris Dryopteris.
Britten's list.

Several of the plants in the above list do not seem to require *lime*, but only *a porous soil*, and are, therefore, found also on sand. The finest specimens of *Orchis pyramidalis* I ever saw, occur, for instance, on sandy ground near the sea; and many others are met with in as flourishing a state on alluvial sand as on limestone soil, for example: *Cerastium arvense*, *Ononis spinosa*, *Galium tricorne*, *Solidago Virgaurea*, *Erigeron acre*, *Carlina vulgaris*, *Cynoglossum officinale*, *Echium vulgare*, *Verbascum Thapsus*, *Plantago Coronopus*, *Convallaria majalis*, and *Carex muricata*.

June 1890.

YORKSHIRE NATURALISTS' UNION.

ANNUAL MEETING AT HULL.

The 28th Annual Meeting was held in the Royal Institution, Hull, on Wednesday, the 20th November, 1889, and the thanks of the Union are due to the Hull Societies, and to the various local gentlemen who had made the arrangements for the day's proceedings.

The attendance was not quite so large as usual, Hull being so far distant from the mass of the population of the county, but a considerable number of local members were present, and some had journeyed long distances, these being principally representatives of the various local societies.

The Sections met at 4.0 o'clock for the consideration of their reports and the election of their officers, and were followed at 4.30 by the meeting of the General Committee, at which eleven Societies were officially represented by delegates, and six others unofficially by permanent members of the General Committee. In addition to these gentlemen, the attendance included two ex-Presidents (Dr. H. C. Sorby, F.R.S., and Rev. W. Fowler, M.A.), the two Hon. Secretaries (Mr. W. Denison Roebuck, F.L.S., and Rev. E. P. Knubley, M.A.), and one Hon. Assistant Secretary (Mr. Edgar R. Waite), two members of the Executive, three Presidents and four Secretaries of Sections, two of the Hon. Local Treasurers, and two other permanent members of the General Committee, making a total attendance of thirty-five members of Committee.

The chair was taken by Dr. H. C. Sorby, F.R.S., and the minutes of the previous meeting taken as read. The 28th Annual Report, which appears on page 139 of 'The Naturalist' for May, was read by the Rev. E. P. Knubley, M.A., one of the Secretaries, and unanimously adopted, on the motion of Mr. J. J. Stead, seconded by Mr. J. M. Kirk.

The Excursion-programme for 1890, which had been drawn up by the Executive, was adopted as follows, on the motion of the Rev. E. M. Cole, M.A., F.G.S., and Mr. S. A. Adamson, F.G.S.

Whit-Monday, 26th May—Driffield for Lowthorpe.
Saturday, 14th June—Dewsbury for Bretton Park.
Tuesday, 8th July—Kildale-in-Cleveland.
Saturday, 2nd August, to Bank Holiday Monday, 4th August—Upper Swaledale (Gunnerside, Kisdon, and Keld).
Thursday, 11th September—Malham and Gordale (in connection with the meeting of the British Association).

The Secretary read a letter signed by Mr. J. W. Davis, F.S.A., F.G.S., on behalf of the Scientific Societies of Halifax and district, cordially inviting the Union to hold its next Annual Meeting at Halifax. The invitation was unanimously accepted, on the proposition of Mr. Jas. Spencer and Dr. F. F. Walton.

The election of officers next took place, when the Rev. W. Fowler, M.A., announced that the Lord Bishop of Wakefield had accepted the Presidency for 1890.

Both the Hon. Secretaries (Mr. Wm. Denison Roebuck, F.L.S., Leeds, and the Rev. E. Ponsonby Knubley, M.A., M.B.O.U., Staveley), and the Assistant Hon. Secretaries (Messrs. P. H. Grimshaw and Edgar R. Waite, both of Leeds), were unanimously re-elected, on the motion of the Revs. W. Fowler, M.A., and E. Maule Cole, M.A. The Hon. Librarian, Mr. Charles Brownridge, F.G.S., was re-elected, as were also the ten retiring members of the Executive, Rev. W. Fowler, M.A., Liversedge; Messrs. S. A. Adamson, F.G.S., Leeds; J. W. Davis, F.S.A., F.G.S., Halifax; Wm. Cash, F.L.S., Halifax; C. P. Hobkirk, F.L.S., Dewsbury; John Emmet, F.L.S., Boston Spa; Benj. Holgate, F.G.S., Leeds; H. T. Soppitt, Bradford; J. J. Stead, Heckmondwike; and M. B. Slater, F.L.S., Malton. Messrs. J. E. Bedford, F.G.S., and C. D. Hardcastle, both of Leeds, were re-elected Hon. Auditors.

The following Hon. Local Treasurers were also re-elected—Messrs. W. E. Brady, Barnsley; J. D. Butterell, Beverley; H. Speight, Bradford; P. F. Lee, Dewsbury; Geo. Winter, Doncaster; Thos. Bunker, Goole; Wm. Cash, F.L.S., Halifax; Edgar R. Waite, F.L.S., Leeds; M. B. Slater, F.L.S., Malton; T. F. Ward, Middlesbrough; T. H. Nelson, M.B.O.U., Redcar; Rev. R. A. Summerfield, B.A., Ripon; Messrs. J. H. Rowntree, Scarborough; W. N. Cheesman, Selby; A. T. Watson, Sheffield; J. J. Stead, Spen Valley; Geo. Parkin, Wakefield; Thos. Newbitt, Whitby; and G. C. Dennis, York, together with the following new Treasurers—Messrs. L. B. Ross, F.C.S., Driffield; Riley Fortune, F.Z.S., Harrogate; John Stears, Hull; R. Barnes, Saltburn; H. Richardson, B.A., Sedbergh; and Wm. Fletcher, Pickering.

The Committees of Research were then appointed.

The Yorkshire Boulder Committee was re-appointed, to consist of Prof. L. C. Miall, F.L.S., F.G.S., Leeds (chairman); Messrs. C. D. Hardcastle, Leeds (vice-chairman); S. A. Adamson, F.G.S., Leeds (hon. secretary); J. E. Bedford, F.G.S., C. Brownridge, F.G.S., Leeds; S. Chadwick, F.G.S., Malton; Rev. E. Maule Cole, M.A., Wetwang; J. W. Davis, F.G.S., F.S.A., Halifax; Prof. A. H. Green, M.A., F.R.S., Oxford; Wm. Gregson, Baldersby; B. Holgate, F.G.S.,

Leeds; Wm. Horne, F.G.S., Leyburn; James Spencer, Halifax; T. Tate, F.G.S., Leeds; J. W. Woodall, F.G.S., Scarborough; J. R. Mortimer, Driffield, and R. Wood, M.D., Driffield, and the Rev. H. W. Crosskey, M.A., as an honorary member.

The Yorkshire Marine Zoology Committee was re-appointed as follows:—Dr. H. C. Sorby, LL.D., F.R.S., Sheffield (chairman); Messrs. J. P. A. Davis, Halifax (hon. secretary); G. Brook, F.L.S., Edinburgh; J. D. Butterell, Beverley; W. Eagle Clarke, F.L.S., Edinburgh; John Cordeaux, M.B.O.U., Great Cotes; W. Cash, F.L.S., Halifax; Rev. W. C. Hey, M.A., York; Baker Hudson, M.C.S., Redcar; T. H. Nelson, M.B.O.U., Redcar; O. T. Olsen, F.L.S., Grimsby; Rev. H. Smith, M.A., Redcar; J. W. Woodall, M.A., F.G.S., Scarborough; and Geo. Massee, F.R.M.S., Kew, as Botanical Referee.

The Yorkshire Fossil Flora Committee was also re-appointed, to consist of Prof. W. C. Williamson, LL.D., F.R.S., Manchester (chairman); James W. Davis, F.L.S., F.G.S., F.S.A., Halifax (vice-chairman); Wm. Cash, F.G.S., F.L.S., Halifax (hon. secretary); Messrs. S. A. Adamson, F.G.S., Leeds; Thos. Hick, B.A., B.Sc., Manchester; B. Holgate, F.G.S., Leeds; R. Kidston, F.G.S., F.R.S.E., Stirling; Robert Law, F.G.S., Halifax; Prof. L. C. Miall, F.L.S., F.G.S., Leeds; James Spencer, Halifax; John Stubbins, F.G.S., F.R.M.S., Leeds; and William West, F.L.S., Bradford.

The Yorkshire Coast Erosion Committee was re-appointed, to consist of Mr. J. W. Woodall, F.G.S. (chairman), and the Rev. E. M. Cole, M.A. (hon. secretary), Mr. J. C. I'Anson, F.S.A., F.G.S., Saltburn-by-the-Sea, and F. Fielder Walton, F.G.S., Hull.

It was then unanimously resolved that the present Section for Micro-Zoology and Micro-Botany be transformed into a Committee of Research, dealing with the same branch of study and working in connection with the British Association Committee on the same subject, to consist of Dr. H. C. Sorby, LL.D., F.R.S., Sheffield (chairman); J. M. Kirk, Doncaster (hon. secretary); W. West, F.L.S., Bradford; Prof. Alfred Denny, F.L.S., Sheffield; C. B. Crawshaw, Dewsbury; C. P. Hobkirk, F.L.S., Dewsbury; Rev. W. E. Hancock, M.A., Knaresborough; Chas. Crossland, Halifax; and M. H. Stiles, Doncaster.

A new Committee was then appointed to investigate the causes of the Disappearance of Native Plants, to consist of the following members:—C. P. Hobkirk, F.L.S., Dewsbury (chairman); P. F. Lee, Dewsbury (hon. secretary); J. Emmet, F.L.S., Boston Spa; M. B. Slater, F.L.S., Malton; Rev. W. A. Shuffrey, M.A., Arncliffe; Rev. W. Thompson, M.A., Sedbergh; J. H. Phillips,

Scarborough; T. W. Woodhead, Huddersfield; H. T. Soppitt, Bradford; R. Barnes, Saltburn-by-the-Sea; and E. Birks, Sheffield.

A second new Committee was appointed to collect and record Geological Photographs of Yorkshire, and to consist of J. W. Davis, F.S.A., F.L.S., F.G.S., Halifax (chairman); S. A. Adamson, F.G.S., Leeds (vice-chairman); J. E. Bedford, F.G.S., Leeds (hon. secretary); Rev. E. M. Cole, M.A., F.G.S., Wetwang; Godfrey Bingley, Leeds; F. W. Branson, F.I.C., F.C.S., Leeds; G. Fowler Jones, Malton; A. E. Nichols, Leeds; and F. F. Walton, F.G.S., Hull.

The General Committee exercised its power to add to its own number ten permanent members annually in favour of R. Barnes, Saltburn; Godfrey Bingley, Leeds; James Booth, F.G.S., Halifax; F. Brittain, Sheffield; R. Fortune, Harrogate; J. Gerrard, Wakefield; H. Richardson, B.A., Sedbergh; F. J. Sawdon, M.D., Hull; H. Speight, Bradford; and T. F. Ward, Middlesbrough.

The following gentlemen whose names had been duly proposed and seconded in writing were unanimously elected Members of the Union:—H. J. Barber, Brighouse; J. H. Buchanan, M.D., Thirsk; Wm. Cooper, C.E., Hull; H. T. Hallimond, Saltburn; A. M. Jackson, Hull; A. O. Jones, M.D., Harrogate; B. B. Le Tall, M.A., York; W. T. H. Nassau, Hull; A. E. Nichols, Leeds; Walter Roberts, Doncaster; F. A. Scott, Hull; W. H. St. Quintin, J.P., Scampston; M. L. Thompson, Saltburn; C. O. Trechmann, Ph.D., Hartlepool; and R. A. Worswick, Saltburn.

The Scarbro' Field Naturalists' Society having being duly proposed, was admitted into the Union.

The secretaries of the sections then announced the election of their officers as follows:—

B. Vertebrate Zoology.—Mr. Thos. Bunker, Goole, president; Mr. James Backhouse, jun., F.Z.S., M.B.O.U., York, and Mr. Edgar R. Waite, F.L.S., Leeds, hon. secretaries; all re-elected.

C. Conchology.—Rev. W. C. Hey, M.A., York, president (re-elected); Mr. John Emmet, F.L.S., Boston Spa (re-elected), and Mr. L. B. Ross, F.C.S., Driffield, hon. secretaries.

D. Entomology.—Mr. Dobrée reported that want of attendance at the meeting had prevented the election from taking place, whereupon it was moved and carried unanimously that the officers be re-elected as follows:—Mr. N. F. Dobrée, F.E.S., Beverley, president; Mr. W. E. Brady, Barnsley, and Mr. J. H. Rowntree, Scarborough, hon. secretaries.

E. Botany.—Mr. C. P. Hobkirk, F.L.S., Dewsbury, president; Mr. P. F. Lee, Dewsbury, and Mr. M. B. Slater, F.L.S., Malton, hon. secretaries; all re-elected.

F. Geology.—Rev. E. M. Cole, M.A., F.G.S., Wetwang, president; Mr. S. A. Adamson, F.G.S., Leeds, and Mr. S. Chadwick, F.G.S., Malton, hon. secretaries; all re-elected.

The members then adjourned to the Café Royal, Saville Street, where tea was provided.

The Annual Public Meeting was held at seven o'clock in the Lecture Theatre of the Royal Institution, the chair being occupied by the President, Mr. Henry E. Dresser, F.L.S., F.Z.S. The substance of the Annual Report and the Excursion-Programme for 1890 were announced to the meeting by the Rev. E. P. Knubley, M.A., M.B.O.U., after which the chair was vacated in favour of the Mayor of Hull (Ald. John Sherburn, M.B.), who called upon Mr. Dresser to deliver the annual Presidential Address, entitled 'A few remarks on Natural History, past and present, together with Notes on a recent Trip to Spain.' The President prefaced his remarks by an expression of the extreme gratification it afforded him to preside over a meeting of Yorkshire Naturalists, especially in the town of Hull, for, essentially a Yorkshireman (as not a drop of blood flows in his veins but what is pure Yorkshire) he was half a Hull man, and spent some of his earlier days in that town. He then proceeded to give a short sketch of the gradual growth of the Study of Natural History, and more especially of Ornithology, to the study of which he had from childhood devoted his spare time.

At the conclusion of the address a vote of thanks, proposed by Dr. Lambert and seconded by Dr. Walton, was unanimously passed to the President, as was also a cordial vote of thanks to the Hull Societies for their kind and hospitable reception.

A hearty vote of thanks, accorded to the Mayor of Hull, brought the proceedings to a close.—E.R.W.

NOTES AND NEWS.

The names recently added to the Geological Society of London include those of Messrs. Bernard Hobson, B.Sc., of Sheffield, and G. W. Lamplugh of Bridlington Quay. Mr. Lamplugh has made numerous contributions to the glacial and general geology of East Yorkshire.

One of the new selections for the honour of F.R.S. is Mr. J. J. H. Teall, M.A., F.G.S., formerly of Nottingham, and now attached to the Geological Survey; author of several valuable papers on north-country geology and petrology.

Another of them is a compliment to natural history research of the old sterling stamp; and zoologists generally will be gratified to learn that the Royal Society's fellowship is to be conferred upon so worthy a naturalist as the Rev. Alfred Merle Norman, D.C.L., of Burnmoor Rectory, co. Durham.

In the Entomological Society's Transactions for 1889, Mr. G. T. Porritt, F.L.S., has a short paper on an extraordinary race of *Arctia mendica* and figures three males and fifteen females, exhibiting striking deviations from the ordinary type, all bred in 1888 and 1889 from specimens found at Grimescar near Huddersfield. The exquisite coloured plate is from the pencil of Mr. S. L. Mosley, F.E.S.

Naturalist,

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BIRDS, 1888.

The present instalment includes a few titles of earlier date which have hitherto escaped notice.

The remarks prefixed to the Bird-bibliography for 1886 (published in the Naturalist for May 1889, p. 145) are equally applicable to the present instalment.

Anon. [not signed]. **Cumberld., Durh., Northb. S., Yorksh., Cheviotld. List of . . . Donations to the Museum . . . of the Natural History Society [of Newcastle-on-Tyne]**, from June, 1877, to August, 1887 [1879—nest and egg of *Cypselus apus* taken at Carlisle, and of *Cotile riparia* at Durham, June 3rd, 1878 (F. Raine); 1880—a young Rook (*Corvus frugilegus*) with white feathers in each wing, shot at Blaydon-on-Tyne (Thomas Thompson); 1881—nest of Dipper (*Cinclus aquaticus*) taken at Ebchester, April 25th, 1878 (D. Embleton); male specimen of the Summer Duck (*Dendronessa sponsa*) from Leazes Park, Newcastle (Mr. Wilson); 1882—egg of *Rhea americana* laid at Chirton Cottage, North Shields, July 17th, 1882 (J. F. Spence); hybrid between *Anas boschas* and *A. acuta* shot near Newcastle, Feb. 1835 (W. C. Trevelyan); Common Wild Duck (*Anas boschas*), variety with great deal of white, shot at Fenham Flats, 23rd Feb., 1883 (E. O. Reid); egg of *Rhea americana* laid at Chirton Cottage, 3rd July, 1883 (J. F. Spence); Fork-tailed Petrel (*Procellaria leucorrhoa*) killed against telegraph wires near Brandling Place, Oct. 1882 (R. Howse); immature Merlin (*Falco æsalon*) shot at White House (J. S. Forster); young male Sparrowhawk (*Accipiter nisus*) taken at Shipcote (Dr. H. S. Pattinson); female ditto taken at Beaufront (L. W. Adamson); Common Wren (*Troglodytes parvulus*) taken at Moorlands (J. G. Fenwick); 1884—nest of Wheatear (*Saxicola œnanthe*) found in a large heap of sandstone, bricks and slag at Nest House, Gateshead (Mr. Robson); skeleton of *Rhea americana*, which died at Chirton, Aug. 1884 (J. F. Spence); Young Heron (*Ardea cinerea*) shot at Bamburgh (J. I. Maling); two Purple Sandpipers (*Tringa striata*) shot near Bamburgh (Id.); Common Pochard (*Fuligula ferina*) shot at Gosforth Lake (R. S. Garwood); two Razorbills (*Alca torda*) and one Guillemot (*Lomvia troile*) from Northumberland coast (J. I. Maling); two Roseate Terns (*Sterna dougalli*) one mature and one young, Northumberland coast (C. M. Adamson); male and female Shoveller (*Spatula clypeata*) shot at Gosforth (N. Dunn); nest of young Kestrels (*Tinnunculus alaudarius*) taken near Alnwick (N. Dunn); hybrid Swan bred at Gosforth Lake in 1883, cross between female *Cygnus ferus* and male *C. olor* (N. Dunn—refer to p. 281 for account of the crossing); Golden Plover (*Charadrius pluvialis*) with white wings shot at Lorbottle, October 12th, 1885 (John Noble); a fine male Great Bustard (*Otis tarda*) said to have been killed in Yorkshire (Misses Crawhall); mature male Pochard (*Fuligula ferina*) shot at Gosforth (N. Dunn); three white eggs of Sparrow (*Passer domesticus*) taken at Gosforth Park, 1882 (Wm. Charlton); 1886—Common Wild Duck (*Anas boschas*) shot at Gosforth (N. Dunn); Little Grebe (*Tachybaptes fluviatilis*) in winter dress, caught in pond at Felling, July 1885, in summer dress, pinioned and kept in Leazes Park, Newcastle, until Feb. 1886 (W. Wilson); two eggs of Water Hen (*Gallinula chloropus*) from Cleadon, one showing the chick having burst the shell, the other showing the chip on the egg previous to bursting the shell (H. C. Abbs); four eggs of Sandwich Tern (*Sterna cantiaca*), Farne Islands (Sam. Graham); eggs of Black-headed Gull (*Larus ridibundus*), from Hallington Reservoir (J. R. Forster); Greenshank (*Totanus grisens=canescens*),

shot at Beadnell (Alex. Yellowley); Common Tern (*Sterna fluviatilis*), young, killed against telegraph-wires, Cragside, Rothbury, Sep. 1886 (Sir W. G. Armstrong); Kestrel (*Tinnunculus alaudarius*) shot at Cleadon (H. C. Abbs); Golden Plover (*Charadrius pluvialis*) in first plumage, shot in Northumberland (John Hancock); immature Herring Gull (*Larus argentatus*), Northumberland coast (John Jackson); Merlin (*Falco æsalon*) and female Great Spotted Woodpecker (*Dendrocopus major*) shot at Long Benton (Edwin Bold); 1887—Spotted Flycatcher (*Musicapa grisola*), killed in Summerhill Grove in summer 1885 (John C. Forster); one Brown Owl (*Syrnium aluco*), two Cuckoos (*Cuculus canorus*), five Crossbills (*Loxia curvirostra*), Jack Snipe (*Limnocryptes gallinula*), Water Rail (*Rallus aquaticus*), Black-throated Diver (*Colymbus arcticus*), female Pochard (*Fuligula ferina*), and male Teal (*Querquedula crecca*)—all from Belsay, Northumberland S. (Sir A. E. Middleton): three Red Grouse (*Lagopus scoticus*) near Featherstone Castle (Id.); Tufted Duck (*Fuligula cristata*) and Golden Eye (*Clangula glaucion*) from Capheaton (Id.); young White Sparrow (*Passer domesticus*) killed at North Seaton, Newbiggin-by-the-Sea, June 1887 (— Bell); immature male Sabine's Gull (*Xema sabinii*) shot near Seaham Harbour, Oct. 10th, 1879 (F. Raine)]. Nat. Hist. Trans. Northumb., Durham and Newc., vol. 9, Part 2 (1888), 276 285.

ANON. [not signed]. **York S.E.**

[Rissa tridactyla, albino, shot at Flamborough]. Land and Water, Nov. 13th, 1886, p. 483.

ANON. [not signed]. **Derbyshire.**

The Snow in Yorkshire and Derbyshire [damaging to Grouse (*Lagopus scoticus*), attracting Pheasants (*Phasianus colchicus*) and Partridges (*Perdix cinerea*) to farm-yards, and Wild Geese (*Anser*, query species) flying over the county]. Field, March 3rd, 1888, p. 287.

ANON. [signed A.N.C.]. **Derbyshire.**

Kite [*Milvus regalis*] **in South Derbyshire** [captured on Hullandward Common, 30th March; measurements given]. Field, April 14th, 1888, p. 536.

ANON. [signed B. (Haigh, Wigan)]. **Lanc. S.**

Abnormally-shaped Plovers[= Peewits, *Vanellus vulgaris*]' **Eggs** [near Haigh, Wigan, 2⅜ in. × 1½ in., and are double-yolked, 2½ in. long]. Field, April 21st, 1888, p. 547.

ANON. [signed W.P.S.]. **Notts.**

Arrival of Summer Birds [at Nottingham; *Saxicola œnanthe*, April 15th]. Field, April 21st, 1888, p. 547.

ANON. [signed W.]. **'York.'**

Fieldfare [*Turdus pilaris*] **nesting in Yorkshire** [not far from York; details of habitat given]. Field, May 26th, 1888, p. 763.

ANON. [signed F.E., Elvet Hill, Durham]. **Durham.**

Pallas's Sand-Grouse [two seen May 25th, 1888, about half a mile out of Durham]. Field, June 9th, 1888, p. 839.

ANON. [not signed]. **Westmorland.**

Dotterel [*Eudromias morinellus*] **in the Lake District** [account of conviction of a man under the Wild Bird Act, and of John Watson's evidence in the case]. Zool., July 1888, 3rd series, xii. 270.

ANON. [not signed]. **Lanc. S.**

The Nightjar [(*Caprimulgus europæus*) arrived on sandhills between Southport and Ainsdale, 21st May, 1888; Stockdove (*Columba œnas*) and Wheatear (*Saxicola œnanthe*) recorded as particularly numerous there, and breeding]. Research, July 1888, p. 13.

ANON. [not signed]. **York S.W.**

The Yorkshire Naturalists' Union [at Saddleworth, 16th June, 1888; *Lagopus scoticus*, *Cuculus*, *Turdus torquatus*, *Cinclus*, *Motacilla lugubris*, and *Saxicola œnanthe* noted]. Research, July 1888, p. 14.

ANON. [signed Stormy Petrel]. **Isle of Man.**

Pallas's Sand-Grouse [(*Syrrhaptes paradoxus*) in the Isle of Man; three shot out of thirty]. Field, July 7th, 1888, p. 5.

ANON. [signed 'R. S.']. **Cheshire.**

The Nightjar [(*Caprimulgus europæus*) nesting at Bidston Hill (8th Aug., 1886) described at length]. Research, Aug. 1888, p. 28.

ANON. [not signed]. **York N.E.**

Yorkshire Naturalists' Union [at Robin Hood's Bay, 16th July, 1888: *Corvus monedula*, *Emberiza citrinella*, *Sylvia cinerea* noted]. Research, Aug. 1888, p. 29.

ANON. [signed R.B.L.]. **Durham, Westmorland, York N.W.**

In Upper Teesdale [an angling paper, with incidental mention of *Tinnunculus* and *Falco peregrinus* at Cauldron Snout]. Field, Aug. 11th, 1888, p. 214.

ANON. [signed H.T. (Nottingham)]. **Notts.**

Curious [buff] Variety of Blackbird [(*Turdus merula*) shot at Cotgrave near Nottingham, Aug. 15th, 1888]. Field, Aug. 25th, 1888, p. 279.

ANON. [various observers]. **Notts., York Mid W. and N.E., Cumberland, Lanc. S.**

Migrant Table, No. 12, 1888 [including observations made at Nottingham (C. S. Watson), Leeds (E. S. Pickard), Rawdon (Report), York (nine names), Thirsk (Ernest Foggitt), Penketh (J. T. Gumersall), and Wigton (Report), upon *Saxicola œnanthe*, *Phylloscopus rufus*, *P. trochilus*, *Hirundo*, *Cotile*, *Chelidon*, *Pratincola rubetra*, *Anthus trivialis*, *Motacilla raii*, *Sylvia atricapilla*, *Cuculus*, *Ruticilla phœnicurus*, *Sylvia cinerea*, *S. curruca*, *Acrocephalus phragmitis*, *Locustella nævia*, *Crex*, *Muscicapa atricapilla*, *Cypselus*, *Tringoides*, *Sylvia hortensis*, and *Muscicapa grisola*; the dates average four days later than the late dates of 1887, and 7½ days behind the mean of twelve years]. Nat. Hist. Journ., Sept. 15th, 1888, xii. 140.

ANON. [not signed]. **Notts.**

The Weather and the Swallows [quite exhausted at Worksop through cold, 13th July, 1888]. Sheffield and Rotherham Independent, teste Harold Davy; Nat. Hist. Journ., Sept. 15th, 1888, xii. 140.

ANON. [Ed. Zoologist]. **Cumberland.**

Reported Nesting of Pallas's Sand-Grouse [*Syrrhaptes paradoxus*] **in Cumberland** [a gross imposition exposed]. Zool., Oct. 1888, 388.

ANON. [signed Worksop]. **Notts.**

Late Brood of Pheasants [(*Phasianus colchicus*); seven hatched, Sept. 21st, 1886, at Blyth, Notts.]. Field, Oct. 2nd, 1888, p. 510.

ANON. [signed H.L. (Barasford, Northumberland)].

A Late Brood of Swallows [(*Hirundo rustica*) in a wooden porch at Barasford, Northumberland, Oct. 1st]. Field, Oct. 6th, 1888, p. 509.

ANON. [Ed. Nat. Hist. Journ.]. **York N.E.**

White Storks [*Ciconia alba*] **at Scarbro** [April 8th and May 24th, 1888, and June 10th, 1886]. Nat. Hist. Journ., Oct. 15th, 1888, xii. 167.

ANON. [not signed]. **York S.W.**

Ackworth (Boys') Reports [*Dendrocopus major* noted; *Fuligula ferina* and *Emberiza schœniclus* near Hemsworth Dam; *Querquedula crecca* at Thorne; nest of *Regulus cristatus* in tree at Brockendale (inhabited by them for three years); and nidification at Ackworth of *Phylloscopus trochilus*, *Sylvia hortensis*, *Acrocephalus phragmitis*, *Anthus trivialis*, *Muscicapa grisola*, and *Ligurinus*]. Nat. Hist. Journ., Oct. 15th, 1888, xii. 158.

ANON. [not signed]. **Lincolnshire.**

The Zoological Society of London. Additions to the Menagerie [Nov. 1st, one Knot (*Tringa canutus*), Lincolnshire, presented by Chas. Whymper]. Field, Nov. 10th, 1888, p. 681. [Nov. 17th, two *Charadrius pluvialis*, Lincolnshire]. Field, Nov. 24th, 1888, p. 759.

ANON. [signed R.H.W.L.]. **York S.E.**

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*) nesting near Beverley]. Field, Dec. 1st, 1888, p. 801.

ANON. [newspaper paragraph]. **Lanc. S.**

Golden Eagle [(*Aquila chrysaëtos*) **taken alive,** wounded, at Quarlton near Bolton. This was erroneous, the species being *Haliaëtus albicilla*]. Nat. Hist. Journ., Dec. 15th, 1888, xii. 248.

ANON. [Sci. Goss., Nov. 1888]. **York N.E.**

Curious Nesting-places [*Turdus merula* built on a pair of steps hanging against a wall at Heslington Hall, near York]. Nat. Hist. Journ., Dec. 15th, 1888, xii. 248.

C. M. ADAMSON. **Near Newcastle.**

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*) near Newcastle; discussion at length of various points]. Field, Oct. 20th, 1888, p. 555.

HENRY F. ALLISON. **York S.E.**

Wild Birds' Protection Act [has been very effective at Flamborough, promoting increase of *Lomvia troile* and *Alca torda* in particular; *Larus argentatus* nested, 1886 and 1888, not in 1885]. Field, June 9th, 1888, p. 840.

H. F. ALLISON. **Linc. N.**

A Lincolnshire Gullery [at Twigmoor near Brigg; description of place given; species not stated, doubtless *Larus ridibundus*]. Field, June 16th, 1888, p. 853.

C. ASHFORD. **York N.E.**

Lapwing [*Vanellus vulgaris*]—**Diversity of Eggs** [in size; measurements of examples taken on Flixton Moor near Scarborough, 1869 and 1871]. Nat., April 1888, p. 114.

J. BACKHOUSE, Jun. **Cumberland, York N.W., Durham.**

Notes on and Additions to the Avi-fauna of Upper Teesdale [the notes refer to *Cinclus*, *Falco peregrinus*, *Accipiter nisus*, *Sula*, *Helodromas*, *Fuligula ferina*—the last three being 'additions,' *Œdemia nigra*, *Lanius excubitor* (erroneously reported before as *L. collurio*), *Numenius phæopus*, *Lanius collurio*, *Muscicapa grisola*, *Eudromias*, *Tringa alpina*, *Tringoides*, *Numenius arquata*, *Loxia curvirostra*, and *Chrysomitris spinus*]. Nat., March 1888, pp. 79-80.

JAMES BACKHOUSE, jun. **York N.W.**

The Yorkshire Naturalists' Union in Lower Wensleydale [at Leyburn, 21st May, 1888; nesting of *Larus ridibundus*, *Totanus calidris*, *Numenius arquata*, *Ruticilla phœnicurus*, and *Vanellus*; occurrence of *Phylloscopus trochilus* and three *Motacillæ*]. Nat., June 1888, p. 177.

J. BACKHOUSE, jun. **York S.E.**

The Yorkshire Naturalists' Union at Market Weighton [6th Aug., 1888; *Syrrhaptes* not seen during the day, though present in the district]. Nat., Sept. 1888, p. 278.

MATTHEW BAILEY. **York S.E.**

Flamborough Bird-notes [two notes; *Fratercula* in abundance; departure of *Lomvia troile* and *Alca torda*; *Puffinus anglorum* in great numbers; *Sterna cantiaca*; increase in numbers of *Lomvia troile*, *Alca torda*, *Fratercula*, and *Rissa*, also of *Larus minutus*; occurrence of *Fulmarus glacialis*, *Nema sabini*, and *Phalaropus fulicarius*; arrival of *Corvus cornix*, *Regulus cristatus*, *Turdus torquatus*, and *Scolopax rusticola*; all the notes are for August to October 1887]. Nat., Jan. 1888, p. 15.

MATTHEW BAILEY. **York S.E.**

Albino Kittiwake [*Rissa tridactyla*] **at Flamborough** [shot 15th November, 1887; description given]. Nat., Feb. 1888, p. 54.

MATTHEW BAILEY. **York S.E.**

Flamborough Notes [anent *Otocorys alpestris* in 1865 and 1886, and large numbers of *Columba livia*, *Turdus pilaris*, *T. iliacus*, *T. musicus*, *T. merula*, *Vanellus*, *Charadrius pluvialis*, *Sturnus*, and *Alauda arvensis*]. Nat., April 1888, p. 114.

MATTHEW BAILEY. **York S.E.**

The Irruption of Pallas' Sand-Grouse [*Syrrhaptes paradoxus*] . . . Flamborough, Yorkshire [June 15th, etc.]. Nat., July 1888, p. 198.

MATTHEW BAILEY. **York S.E.**

Notes from Flamborough [arrivals of *Ruticilla phœnicurus*, *Saxicola œnanthe*, *Hirundo rustica*, *Cuculus*, *Muscicapa*, *Turdus torquatus*, and *Cypselus apus*, all in April 1888]. Nat., Aug. 1888, p. 242.

MATTHEW BAILEY. **York S.E.**

The Solan Goose [*Sula bassana*] **near Bridlington** [found dead at Sewerby]. Nat., Aug. 1888, p. 234.

MATTHEW BAILEY. **York S.E.**

Flamborough Bird-notes [*Cuculus*, *Caprimulgus*, *Motacillæ*, *Ruticilla*, and *Saxicola* noted on departure]. Nat., Nov. 1888, p. 330.

GEO. BARCHARD. **York S.E.**

Pallas's Sand-Grouse [three shot 20th May, 1888, at Mapletown, three miles south of Hornsea; details given]. Field, June 9th, 1888, p. 839.

GEO. BARCHARD. **York S.E.**

Pallas's Sand-Grouse [(*Syrrhaptes paradoxus*) seen in flocks at Mapleton and Cowden, June 7th and 8th]. Field, June 16th, 1888, p. 854.

GEO. BARCHARD. **York S.E.**

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*) arrived at Mapleton, East Riding, again, on 28th June to July 5th]. Field, July 14th, 1888, p. 53.

HUGH BARCLAY. **Cheviotland.**

Preservation of Sea Birds on the Farne Islands [extracts from printed report detailing results of steps taken to this end; *Sterna macrura*, *S. fluviatilis*, *S. cantiaca*, *Somateria mollissima*, *Larus fuscus*, *L. argentatus*, *Hæmatopus*, *Eudromias*, *Fratercula*, *Lomvia*, *Phalacrocorax carbo* referred to]. Field, Oct. 6th, 1888, p. 509.

HUGH G. BARCLAY. **Cheviotland.**

The Protection of Sea Birds on the Farne Islands [being report on the nesting or occurrence during 1888 of *Sterna cantiaca*, *S. macrura*, *S. fluviatilis*, *Somateria mollissima*, *Larus fuscus*, *L. argentatus*, *Hæmatopus*, *Eudromias*, *Fratercula*, *Lomvia*, and *Sterna dougalli*]. Zool., Nov. 1888, 3rd Series, xii. 431.

DORA BARKWORTH. **York S.E.**

Swallows nesting on a Curtain Pole [at Raywell near Hull, in 1887 and 1888; details given, but species not stated]. Field, June 16th, 1888, 853.

DORA BARKWORTH. **York S.E.**

Sequel to the Story of the Swallow's Nest on a Curtain Pole [a second nest made and young duly hatched, at Raywell near Hull]. Field, Oct. 20th, 1888, p. 556.

EDWARD BIDWELL. **Notts.**

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*) in Sherwood Forest; account of their occurrence and of a visit to the flock]. Field, Aug. 4th, 1888, p. 190.

F. BOYES. **York S.E.**

Reappearance of Pallas's Sand Grouse in Europe [noting its reappearance in East Yorkshire on the anniversary of its appearance there in 1863; details of locality of flock seen May 20th, not given; P.S. states thirty seen near Spurn on 25th]. Field, May 26th, 1888, p. 763.

F. Boyes. **York S.E.**

Sand Grouse [(*Syrrhaptes paradoxus*) **in East Yorkshire**; great destruction since nesting commenced]. Field, June 23rd, 1888, p. 901.

F. Boyes. **York S.E.**

Night-Cry of the Moorhen [(*Gallinula chloropus*) at Beverley, described]. Field, Sep. 8th, 1888, p. 373.

F. Boyes. **York S.E.**

Sparrows [(*Passer domesticus* and *P. montanus*] **nesting in Burrows** [of *Cotile riparia*]. Field, Nov. 10th, 1888, p. 680.

F. Boyes. **York S.E.**

Breeding of Pallas's Sand Grouse [(*Syrrhaptes paradoxus*); notes on habits]. Field, Nov. 10th, 1888, p. 680.

F. Boyes. **York S.E.**

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*) in East Yorkshire; the note is partly controversial, but includes notes on occurrence, breeding, habits, etc.]. Field, Dec. 8th, 1888, p. 842.

F. Boyes. **York S.E.**

Note of the Jack Snipe [(*Limnocryptes gallinula*) as noted near Beverley]. Field, Dec. 8th, 1888, p. 843.

W. D. Braithwaite. **York S.W.**

A Wounded Kingfisher [*Alcedo ispida*] on the Went [picked up 2nd March, 1888]. Nat. Hist. Journ., April 14th, 1888, p. 71.

James Brigham. **York N.E.**

Pallas's Sand-Grouse [(*Syrrhaptes paradoxus*); six seen at Slingsby, Yorkshire, June 9th]. Field, June 16th, 1888, p. 854.

Frank Broadbent. **Notts.**

Hooded Crow [*Corvus cornix*] **attacking a Rat** [at South Collingham near Newark]. Field, March 24th, 1888, p. 424.

P. J. H. Brogdon. **Linc. S.**

[Cream-coloured] Variety of the Redwing [(*Turdus iliacus*) winged from a flock of this species and *T. pilaris*, near Spalding, 27th January, 1888; described]. Field, Feb. 4th, 1888, p. 159.

C. E. Brown. **York Mid W.**

Rough-Legged Buzzard [*Archibuteo lagopus*] **near Leeds** [at Meanwood, November 6th]. Field, Nov. 10th, 1888, p. 680.

Thomas Bunker. **York S.E.**

Yorkshire and Lancashire Naturalists at Saddleworth [June 16th, 1888; *Turdus musicus*, *T. merula*, *T. torquatus*, *Cinclus*, *Erithacus*, *Accentor*, *Alauda arvensis*, *Emberiza citrinella*, *E. miliaria*, *Sturnus*, *Lagopus scoticus*, *Pica caudata*, *Saxicola œnanthe*, *Anthus trivialis*, and *Cuculus* noted]. Nat., July 1888, p. 212.

Thomas Bunker. **York N.E.**

The Yorkshire Naturalists' Union at Robin Hood's Bay [July 16th, 1888; *Corvus monedula*, *Sylvia atricapilla*, *Emberiza citrinella* (with nest and eggs), *Turdus merula*, *T. musicus*, *Sturnus*, *Vanellus* (already in flocks), *Accentor*, *Passer domesticus*, *Sylvia cinerea*, and *Anthus pratensis* noted]. Nat., Aug. 1888, p. 238.

A. H. Burtt. **York N.E.**

Goosander [*Mergus merganser*] **shot near Sherburn** [in late January, 1888]. Nat. Hist. Journ., Feb. 15th, 1888, p. 24.

E. P. P. Butterfield. **York Mid W. or S.W.**

Crested Tit [*Parus cristatus*] **near Keighley** [in Aug. 1887; *Helodromas ochropus* and *Totanus calidris* at Many-Wells, Sep. 10th, 1887]. Nat., Jan. 1888, p. 15.

E. P. P. Butterfield. **York S.W.**

Black-throated Diver [*Colymbus arcticus*] **near Bingley** [shot at Manywells last winter; the only specimen on record for district]. Nat., Aug. 1888, p. 236.

E. P. P. Butterfield. **York Mid W.**

Unusual Nesting-site for Missel Thrush [(*Turdus viscivorus*) near Barden Moor; nesting of *Muscicapa luctuosa* in Barden Tower also noted]. Nat., Sep. 1888, p. 264.

H. S. Byers. **York N.W.**

Bittern [*Botaurus stellaris*] **near Ripon** [at Norton Conyers, Jan. 1887]. Nat., Aug. 1888, p. 242.

C. Candler. **Linc. N.**

Rough-legged Buzzard [*Archibuteo lagopus*] in Lincolnshire [at Revesby near Boston, Nov. 1888]. Field Nov. 24th, 1888, p. 759.

Basil Carter. **York N.W.**

Robin [*Erithacus rubecula*] **caught in a Mouse-trap** [at Burton House, Masham]. Nat., Nov. 1888, p. 330.

James Carter. **York N.W.**

Climatic Phenomena and Curious Effect of the late Fog in North Yorkshire [upon *Columba palumbus*, described]. Field, Jan. 21st, 1888, p. 87.

James Carter. **York N.W.**

Effects of [severe] weather on game [*Lagopus scoticus* and *Perdix cinerea*] **in North Yorkshire** [near Masham; appearance of four swans (*Cygnus*, species not determined) on the Yore noted]. Field, March 24th, 1888, p. 424.

James Carter. **York N.W.**

Early Nesting of the Brown Owl [(*Syrnium aluco*) at Masham; dates given for five years, earliest being March 8th, 1884]. Field, March 31st, 1888, p. 461.

James Carter. **York N.W.**

Notes from [Masham in] North Yorkshire [*Saxicola œnanthe* arrived 30th March; *Anthus pratensis* and *Motacilla melanope* in great numbers; *Perdix cinerea* killed by *Corvus frugilegus* when weakened by severe weather]. Field, April 7th, 1888, p. 472.

J. Carter. **York N.W.**

Arrival of Summer Birds [at Masham; *Cotile*, *Phylloscopus trochilus*, and *P. rufus*, all on April 17th]. Field, April 21st, 1888, p. 547.

James Carter. **York N.W.**

Notes from North Yorkshire [Masham; *Totanus calidris* arrived April 7th, *Hirundo* and *Tringoïdes* on 16th; *Syrnium aluco* noted with five eggs]. Field, April 21st, 1888, p. 547.

James Carter. **York Mid W. or N.W.**

Golden Oriole [*Oriolus galbula*] **in Yorkshire** [found dead at Hob Green near Ripon; seen by recorder on 3rd May]. Field, May 19th, 1888, p. 702.

James Carter. **York N.W.**

Notes from [Masham in] North Yorkshire [nesting of *Totanus calidris* and *Dendrocopus minor*, decrease of *Muscicapa luctuosa* and *Alcedo ispida*, nesting of *Tringoïdes* and *Ruticilla phœnicurus* (on the ground)]. Field, June 2nd, 1888, p. 798.

James Carter. **York Mid W.**

The Present Visitation of Sand-Grouse [(*Syrrhaptes paradoxus*) one telegraphed near Boroughbridge, 24th May; same day eight more seen a few miles distant]. Field, June 2nd, 1888, p. 797.

James Carter. **York N.W.**

Notes from [Masham in] North Yorkshire [anent appearance of *Ægialitis hiaticula* in spring 1888; never observed before, although *Squatarola*, *Procellaria pelagica*, *Tringa alpina*, *Helodromas*, and *Eudromias morinellus* have been noted]. Field, June 9th, 1888, p. 840.

THOMAS CARTER. **York N.W. and Mid W.**

Movements of Grouse [*Lagopus scoticus*] **in Hard Weather** [suffering very severely about Masham, as also did Partridges (*Perdix cinerea*); editorial note appended as to similar movements of Grouse near Ilkley, Arthington, Weeton, and Harewood]. Zool., March 1888, x. 107.

ALFRED C. CHAPMAN. **'Northumberland.'**

Habits of the Tawny Owl [(*Syrnium aluco*); with reference to its nesting in Northumberland]. Field, April 14th, 1888, p. 536.

ALFRED CRAWHALL CHAPMAN. **Durham or Northumberland.**

Breeding of Pallas' Sand Grouse [(*Syrrhaptes paradoxus*) and note as to a flock in the North-east of England]. Field, Sep. 1st, 1888, p. 316.

JOSEPH CHAPPELL. **Lanc. S., Cheshire.**

Bigamy and Polygamy among Starlings [(*Sturnus vulgaris*) near Manchester and Altrincham, several instances; one also of Jackdaws (*Corvus monedula*)]. Young Nat., Sep. 1888, p. 182.

R. W. CHASE. **York S.E., Cheviotland.**

Notes upon the Recent Occurrence of Pallas' Sand Grouse [giving notes and dates of specimens at Welwick near Patrington, Spurn, Holy Island, Flamborough, etc.]. Midl. Nat., July 1888, pp. 186-7.

W. E. CLARKE. **York S.W.**

The Yorkshire Naturalists' Union at Hatfield Chace [Sept. 21st, 1887; *Fratincola rubicola* and *Circus cyaneus* observed during the day; *Tetrao tetrix* and *Columba œnas*, locally captured, exhibited at the meeting]. Nat., March 1888, pp. 84-85.

W. EAGLE CLARKE. **York S.E.**

Nightingale [*Daulias luscinia*] **near Beverley** [in May, 1888]. Nat., June, 1888, p. 160.

W. EAGLE CLARKE. **York N.E.**

White Stork [*Ciconia alba*] **near Scarborough** [one picked up 'recently' i.e. in May? 1888]. Nat., June 1888, p. 169.

W. EAGLE CLARKE. **York Mid W., S.E., S.W. and N.W., Notts.**

Irruption of Pallas' Sand-grouse [(*Syrrhaptes paradoxus*) into Yorkshire (Leeds, Spurn, Ardsley, Goole, Flamborough, Norton-le-Clay), Notts. (Clifton), etc., in May 1888]. Nat., June 1888, p. 170; rep. Sci. Goss., July 1888, p. 164.

W. EAGLE CLARKE. **York S.E.**

Arrival of Crossbills [*Loxia curvirostra*] on the Yorkshire [Holderness] Coast. Nat., Aug. 1888, p. 224.

W. EAGLE CLARKE. **'Lancashire.'**

The Eared Chat [*Saxicola albicollis* Vieill.] **not a British Bird** [the species which occurred in Lancashire being *S. stapazina*]. Nat., Aug. 1888, p. 234.

WM. EAGLE CLARKE. **York Mid W.**

Purple Heron [*Ardea purpurea*] **in West Yorkshire** [shot at Farnley near Otley, 20th April, 1888, now in possession of Rev. F. Fawkes]. Nat., Nov. 1888, p. 330.

WM. EAGLE CLARKE. **York S.E.**

Weight of Sand Grouse [(*Syrrhaptes paradoxus*) a couple shot at Hollym in Holderness, Nov. 19th, weighed 11 and 12 oz.]. Field, Dec. 22nd, 1888, p. 912.

T. D. A. COCKERELL. **Lanc. W., Cumberland, Derby, Yorkshire, Lincs., Cheviotland, Northumberland.**

North of England Specimens in the British Collection at the British Museum [*Anser brachyrhynchus* (Lancs); *Bernicla leucopsis* and *B. canadensis* (Cumberland); *Falco œsalon* (Lancs.) and young (Derbyshire), *Coracias garrula*

Naturalist,

(York); *Turdus torquatus* and *Pagophila eburnea* (Yorkshire); *Tringa canutus* and *Philomachus pugnax* (Lincs.), *Sterna cantiaca* (Farnes), *Tringa subarquata* (Lytham); *Himantopus candidus* (Lincs.), and *Tetrao tetrix* (Wallington, Northumberland)]. Nat., Aug. 1888, p. 227.

E. M. Cole. **York S.E.**

[Nesting of Norfolk Plover (*Œdicnemus scolopax*) on the Wolds, at Kiplingcotes and elsewhere]. Nat., Sep. 1888, p. 278.

E. Maule Cole. **York S.E.**

Pallas' Sand-Grouse [*Syrrhaptes paradoxus*] **at Wetwang-on-the-Wolds** [a brace seen Sep. 6, 1888; cry noted]. Nat., Dec. 1888, p. 354.

A. Collinson, Secretary. **York N.E.**

York, Bootham. Natural History Club [Excursion to Scarbro', June 14th, eggs of *Sylvia hortensis* and *Anthus trivialis* (J. F. Hills); at Rievaulx, May 22nd, *Muscicapa atricapilla* and eggs of *Lagopus scoticus* (Harris Smith)]. Nat. Hist. Journ., Oct. 15th, 1888, xii. 160.

A. Collinson. **York N.E.**

[Mealy Redpoll (*Linota linaria*) **and 15 Long-tailed Tits** (*Acredula rosea*) seen near Nova Scotia Wood]. Nat. Hist. Journ., Nov. 15th, 1888, xii. 203.

A. Collinson [Secretary]. **York N.E., etc.**

York, Bootham. Natural History Club [ornithological notes anent *Hirundo rustica*, Oct. 13th; *Strix flammea*, *Ruticilla phœnicurus*, *Sylvia cinerea*, *Ardea cinerea*, *Tachybaptes fluviatilis*, and *Accipiter nisus*, Sept. 13th; all near York and Strensall]. N. H. Journ., Nov. 15th, 1888, xii. 203.

H. H. Corbett. **Lanc. S., Cheshire.**

Bigamy in Birds [three *Corvus monedula* making one nest in a Bolton church in 1888; similar case some years at Cheadle Hulme with *Sturnus*; others with *Vanellus*, *Hirundo*, *Chelidon*, *Corvus frugilegus*, and *Emberiza schœniclus*]. Young Nat., April or May, 1888, ix. 104.

John Cordeaux. **York N.E. and S.E., Cheviotld., Durham, Linc. N.**

[Migration of Birds] Report of the Committee, consisting of Mr. John Cordeaux (Secretary), Professor A. Newton, Mr. J. A. Harvie-Brown, Mr. William Eagle Clarke, Mr. R. M. Barrington, and Mr. A. G. More, re-appointed at Birmingham for the purpose of obtaining (with the consent of the Master and Brethren of the Trinity House and the Commissioners of Northern and Irish Lights) observations on the Migration of Birds at Light-houses and Lightvessels . . . [this abstract report deals with the importance of the various parts of the coast, and with the usual routes followed by birds on migration; a few notes on special birds are given, including *Rallus aquaticus* at Spurn and Coquet Island, *Dendrocopus major* in North Lincs., and other birds on the English east coast are mentioned]. 57th Rep. Brit. Ass., Manchester Meeting (1887), 1888, pp. 70-73.

John Cordeaux. **York S.E.**

Heligoland [with casual references to *Emberiza rustica*, *Sylvia nisoria*, *Saxicola deserti*, Arctic Bluethroat, and *Otocorys alpestris* at Spurn]. Nat., Jan. 1888, p. 1.

John Cordeaux. **Linc. N., York S.E.**

Ornithological Notes from North Lincolnshire [for 1887; *Pratincola rubicola*, *Anas boschas*, *Mareca*, *Anser albifrons*, and *Plectrophanes nivalis* noted January 5th (hard frost); *Anthus pratensis*, *Motacilla lugubris*, and *Pratincola rubicola* on January 7th (hard frost); *Rissa*, *Fuligula marila*, *Squatarola*, *Ægialitis hiaticula*, *Tringa canutus*, *T. alpina*, *Larus ridibundus*, *Fuligula ferina* on the mud-flats, 12th January; *Turdus viscivorus* re-appeared 26th January; *Limosa lapponica* shot near Cleethorpes, Feb. 4th; *Fuligula marila*, Feb. 8th; *Tringa canutus*, Feb. 24th; *Vanellus* paired Feb. 25th; *Motacilla lugubris*, first seen Feb. 25th; *Anthus pratensis*, Feb.

25th; *Saxicola œnanthe*, numerous April 5th; *Linota rufescens* and *Parus ater britannicus*, April 7th; *Tringa alpina* in summer plumage, May 10th; *Squatarola* and both *Numenii*, May 10th; *Corvus corone* nesting May 10th; four *Daulias*, May 10th; *Limosa*, *Ægialitis hiaticula*, *Tringa alpina* and both *Numenii*, May 12th; *N. arquata*, Aug. 6th; *Phylloscopus trochilus* migrating Aug. 7th; Wild Geese, Aug. 18th; unusual number of *Tringa subarquata*, Aug.-Sept., both here and at Spurn; *T. minuta*, *T. canutus*, and *Limosa* at Spurn, Aug. 25th; arrival on Sept. 2nd of *Tringa canutus*, *T. minuta*, and *Hydrochelidon nigra* in great numbers; *Ruticilla phœnicurus*, *Muscicapa atricapilla* at Kilnsea, Aug. 26th; *Tringa canutus*, both *Numenii*, *Limosa* (Common Godwit), *Tringa subarquata*, *Calidris arenaria*, *Ægialitis hiaticula*, *Tringa alpina*, *Strepsilas interpres*, *Charadrius pluvialis* (summer plumage), *Squatarola* (do.), *Helodromas*, *Tringoïdes*, *Sylvia cinerea*, and *Saxicola œnanthe*, all at Kilnsea and Spurn, 26th Aug.; *Ruticilla phœnicurus* on passage, Sept. 6th; *S. œnanthe*, numerous Sept. 7th; first *Scolopax rusticola*, Sep. 23rd; one found dead on lantern of Swin Middle Light-vessel, 10th Nov.; *Erithacus*, numerous Oct. 2nd; *Corvus corax*, a pair at Croxby Pond, Oct. 1st; *Anthus richardi* at Tetney, Oct. 12th, also at Spurn; *Alauda arvensis* and a few *Totanus canescens* near Tetney; six *Harelda glacialis* shot this autumn; *Numenius arquata* weighing 40 oz., Dec. 8th]. Zool., Feb. 1888, 3rd Series, xii. 59-63.

JOHN CORDEAUX. **York S.E.**

Pallas's Sand-Grouse [(*Syrrhaptes paradoxus*) giving contents of stomach of one shot at Spurn on 19th May]. Field, June 9th, 1888, p. 840.

JOHN CORDEAUX. **York S.E., Linc. N.**

Notes on the occurrence of Pallas' Sand-Grouse [*Syrrhaptes paradoxus*] **in the Spurn district [and in North Lincolnshire]** in the spring of 1888 [full details of occurrences from May 18th to 26th, with notes on flight, habits, call note, etc.]. Nat., July 1888, pp. 195-197.

JOHN CORDEAUX. **York S.E., Linc. N.**

Notes from the Spurn in the Spring of 1888 [anent *Turdus torquatus*, *Iynx torquilla*, *Upupa epops*, *Endromias morinellus*, *Limosa lapponica*, *Hæmatopus ostralegus*, *Numenius arquata* and *Talorna cornuta*]. Nat., July 1888, p. 202.

JOHN CORDEAUX. **Linc. N.**

Field Notes from North Lincolnshire in the Spring of 1888 [March 12th to May 24th; notes on *Fratercula arctica*, *Vanellus*, *Charadrius pluvialis*, *Motacilla lugubris*, *Anthus pratensis*, *Tringa alpina*, *Falco peregrinus*, *Columba œnas*, *Helodromas*, *Gallinago cœlestis*, *Rallus aquaticus*, *Emberiza schœniclus*, *Hirundo*, *Saxicola œnanthe*, *Phylloscopus rufus*, *P. trochilus*, *Ruticilla phœnicurus*, *Turdus merula* (var.), *Querquedula crecca*, *Anas boschas*, *Spatula*, *Colymbus glacialis*, *Fulica*, *Gallinula chloropus*, *Corvus corone*, *Turdus torquatus*, *Motacilla rail*, *M. lugubris*, *Pratincola rubetra*, *Turdus pilaris*, *Sylvia curruca*, *Anthus trivalis*, *Cuculus*, *Motacilla alba*, *Acrocephalus phragmitis*, *Cotile*, both *Numenii*, *Tadorna cornuta*, *Fuligula cristata*, *Squatarola*, *Turtur communis*, *Tringoides*, *Totanus calidris*, *Asio brachyotus*, *Strix flammea*, *Larus ridibundus*, *Fuligula ferina*, *Eudromias*, *Muscicapa grisola*, *Sylvia curruca*, *S. hortensis*, *Ægialitis hiaticula*, *Strepsilas*, *Syrrhaptes*, *Daulias*, and *Tinnunculus*]. Zool., July 1888, xii. 241-247.

JOHN CORDEAUX. **York S.E.**

Crossbills [*Loxia curvirostra*] **in Heligoland** [and at Spurn, July 1888]. Nat., Aug. 1888, p. 224.

JOHN CORDEAUX. **York S.E.**

Food of Crossbills [(*Loxia curvirostra*) shot near Kilnsea, July 1888; stomachs filled with *Philænus spumarius*]. Nat., Sep. 1888, p. 276.

JOHN CORDEAUX. **Linc. N. and S., York S.E. and N.W.**

Notes on the Occurrence of Pallas's Sand Grouse [*Syrrhaptes paradoxus*] **in Lincolnshire** [a detailed account of the flights of 1863 and 1888, with dates and localities]. Zool., Nov. 1888, xii. 419-423.

JOHN CORDEAUX. **Linc. N.**

Late Nesting of the Corn Bunting [(*Emberiza miliaria*) at Great Cotes, 29th Sept., 1888]. Zool., Nov. 1888, xii. 429.

JOHN CORDEAUX. **York S.E.**

Occurrence of the American Pectoral Sandpiper [*Tringa maculata* Vieill.] **on the Yorkshire Coast** [shot near Kilnsea, 2nd Oct., 1888; diagnostic remarks and recital of previous Yorkshire records]. Nat., Dec. 1888, p. 354.

E. F. CROSSE. **Lanc. S.**

Blackbird [*Turdus merula*] **turning white** [in confinement at Liverpool]. Field, Sept. 8th, 1888, p. 373.

L. MORLEY CROSSMAN. **Cheviotland.**

Pallas's Sand-Grouse [(*Syrrhaptes paradoxus*); coveys on and near Holy Island]. Field, June 16th, 1888, p. 854.

F. CURTIS and E. D. D[ONCASTER]. **York N.W.**

[Two Crossbills (*Loxia curvirostra*), Wensleydale]. Nat. Hist. Journ., March 15th, 1888, xii. 42.

—. DAWES. **Notts.**

[Observance of *Bernicla leucopsis* and *Loxia curvirostra* near Nottingham; City of London Ent. Soc., July 6th, 1888]. Young Nat., Aug. 1888, ix. 160.

F. W. DICKINSON. **Derbyshire.**

Siskins [*Chrysomitris spinus*] **in North Derbyshire** [8th Dec., 1887; a small flock, three males and two females]. Nat., Aug. 1888, p. 224.

C. WALLEY DOD. **Cheshire.**

Squirrels and Yew Berries [at Edge Hall, Malpas; the destruction of Yew berries considered by Ed. Field rather attributable to *Coccothraustes vulgaris*, which Mr. Dod mentions as about]. Field, Sept. 15th, 1888, p. 413.

E. D. DONCASTER. **Derbyshire.**

[Birds of North Derbyshire; Golden Eagle (*Aquila chrysaëtus*), Bittern (*Botaurus stellaris*) and Buzzard (*Buteo vulgaris*) mentioned as having occurred, but no further particulars]. Nat. Hist. Journ., March 15th, 1888, xii. 42.

E. D. DONCASTER. **York N.E.**

Shamming [Lameness by a nesting Chiffchaff (*Phylloscopus rufus*) near Rievaulx Abbey, 1887]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 182.

W. DUCKWORTH. **Furness.**

Arrival of Summer Birds [at Ulverston; *Hirundo*, April 17th; *Saxicola œnanthe*, April 6th; *Phylloscopus rufus*, April 1st]. Field, April 21st, 1888, p. 547.

EDS. NAT. HIST. JOURN. **Notts., York S.W., N.E., N.W., Cumbld.**

The Migrant Table, 1886 [dates and averages given for Mansfield, Barnsley, Ackworth, York, Thirsk, Cotherstone, and Upper Solway of 26 migrant birds]. Nat. Hist. Journ., Sep. 15th, 1886, pp. 129-130.

JOHN EVANS. **Linc. S.**

Gannet [*Sula bassana*] **and Rough-legged Buzzard** [*Archibuteo lagopus*] **in Lincolnshire** [shot Nov. 4th in Bourne Fen, and killed Dec. 8th at Grimsthorpe, respectively]. Field, Dec. 29th, 1888, p. 950.

F. R. FITZGERALD. **York S.E.**

Pallas's Sand-Grouse [*Syrrhaptes paradoxus*] **in Yorkshire** [at Withernsea, a flock]. Zool., Aug. 1888, xii. 299.

RILEY FORTUNE. **York Mid W.**

Pied Flycatcher [*Muscicapa atricapilla*] **at Harrogate** [five pairs at Birk Crag, 4th May 1888; irregularity of appearance noted for 1886 and 1887]. Zool., June 1888, xii. 229.

RILEY FORTUNE. **York Mid W., Durham.**

Hawfinch [*Coccothraustes vulgaris*] **near Harrogate** [in eleven localities, named: also noted for Axwell Park near Newcastle in 1885]. Zool., June 1888, xii. 230.

RILEY FORTUNE. **York Mid W.**

Redshank [*Totanus calidris*] **breeding near Harrogate** [three years' observations]. Zool., June 1888, xii. 235.

RILEY FORTUNE. **York Mid W.**

Pallas's Sand-Grouse [(*Syrrhaptes paradoxus*) four near Beaver Dyke, Harrogate, 26th May 1888; others in Nidderdale]. Field, June 9th, 1888; p. 839.

RILEY FORTUNE. **York Mid W.**

Pallas's Sand-Grouse [(*Syrrhaptes paradoxus*) near Darley in Nidderdale; two shot out of five by Mr. Smorfitt]. Field, June 16th, 1888, p. 854.

RILEY FORTUNE. **York Mid W.**

Kestrel [*Tinnunculus alaudarius*] **nesting in a House** [at Killinghall near Harrogate]. Zool., July 1888, xii. 269.

RILEY FORTUNE. **York Mid W.**

Pallas's Sand Grouse [*Syrrhaptes paradoxus*] **in Yorkshire** [several occurrences detailed; Nidderdale, Goldsborough, Beaver Dyke]. Zool., Aug. 1888, xii. 299.

RILEY FORTUNE. **York Mid W., S.E.**

Late Stay of Swift [(*Cypselus apus*) at Harrogate Sep. 6th, and at Spurn to Aug. 31st]. Field, Sep. 29th, 1888, p. 476.

[LORD] GAINSBOROUGH. **Notts.**

Pallas's Sand Grouse [*Syrrhaptes paradoxus*] in Nottinghamshire [account of an inspection along with J. Whitaker of a flock in the Forest]. Field, July 21st, 1888, p. 86.

RALPH PAYNE GALLWEY. **Notts.**

Notes on Duck Decoys, in three Letters [with a reference to one at Haughton, Notts, as one of the most ancient]. Land and Water, Oct. 23rd, 1886, pp. 417-418.

RALPH PAYNE GALLWEY. **Derbyshire, Notts., Lanc. S., Linc. N. and S., York N.W., N.E., S.E. and S.W., Westd.**

Notes on Duck Decoys, in Three Letters . . . Letter III [gives list of decoys—one in Derbyshire, two in Lancashire, 35 in Lincolnshire, four in Notts, one in Westmorland, and 13 in Yorkshire]. Land and Water, Dec. 18th, 1886, p. 618.

F. GAYNER and B. S. ROWNTREE. **Lanc. S.**

A Day on the Southport Sand-Hills [9th June, 1888; nidification of *Alauda arvensis*, *Anthus pratensis*, *Cuculus*, *Ægialitis hiaticula*, *Sterna macrura*, and *Saxicola œnanthe*; *Columba œnas* and *Lagopus scoticus* also noted]. Nat. Hist. Journ., Sep. 15th, 1888, xii. 122-123.

G. GRINSTEAD. **Linc. N.**

A Live Little Auk [(*Mergulus alle*) **caught at Skegness,** Jan. 18th, 1888; notes of three others at different times]. Field, Jan. 28th, 1888, p. 117.

J. H. GURNEY, jun. **York S.E.**

Reported occurrence of the Little Egret [*Ardea garzetta*] **in Yorkshire** [evidence quoted and reasons assigned for thinking the Aike specimen was the Great White Heron (*Ardea alba*)]. Zool., Aug. 1888, xii. 302.

J. H. GURNEY, jun. **Cheviotland.**

Crossbill [*Loxia curvirostra*] **at the Farne Islands** [picked up dead, July 17th, 1888]. Nat., Sep. 1888, p. 276.

J. H. GURNEY, Jun. **Off York S.E. and Linc. N.**

Crossbills (*Loxia curvirostra* and *L. pityopsittacus*) **on the East Coast** of England [at Outer Dowsing Lightship, etc.]. Nat., Nov. 1888, p. 330.

G. H. CATON HAIGH. **Linc. N.**

Grey Phalarope [*Phalaropus fulicarius*] **in Lincolnshire** [one shot at Tetney, Dec. 1st, 1887; one there in 1879]. Zool., Jan. 1888, xii. 33.

G. H. CATON HAIGH. **Linc. N.**

Long-tailed Duck [*Harelda glacialis*] **in Lincolnshire** [several instances, Tetney and Killingholme, all immature, Oct. and Nov. 1887]. Zool., Jan. 1888, xii. 31.

G. H. CATOR [sic] HAIGH. **Linc. N.**

Sand Grouse [(*Syrrhaptes paradoxus*) at Fulstow, Lincs.; seven killed by poisoned grain, early in June]. Field, June 23rd, 1888, p. 901.

ALLAN B. HALL. **York Mid W.**

Birds near Leeds [*Anas boschas* and *Fulica atra* on Adel Dam, 12th Aug., 1888]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 181.

ALLAN B. HALL. **York N.E.**

Birds near Thirsk [*Anas boschas* on Gormire, *Ardea cinerea* near Kirkby Knowle Tarn, *Accipiter nisus* in Flazendale; all on 6th Aug., 1888]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 181.

JOHN HANCOCK. **Northumberland S.**

On Two Wild Hybrids recently captured in Northumberland [first between *Emberiza citrinella* and *E. schœniclus*, Whitley Bents, Jan. 1886; second between *Ligurinus chloris* and *Linota cannabina*, Kenton, 24th Dec., 1887; both now in Newcastle Museum]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, Part 1 (1888), p. 218.

C. C. HANSON. **York S.W.**

Fieldfares [*Turdus pilaris*] near Halifax in July [on the 1st, a flock of eight or nine heard and seen]. Nat., Sept. 1888, p. 276.

H. S. HARLAND. **York S.E.**

Remarkable Swallow[*Hirundo rustica*]**'s Nest** [on a lath hanging from the ceiling of an East Riding waggon-shed]. Field, Aug. 25th, 1888, p. 279.

H. S. HARLAND. **York N.E.**

Homing Instinct in Cage Birds [a young *Turdus merula* set free about a mile away, returned to its cage in Malton]. Field, Sept. 1st, 1888, p. 316.

R. P. HARPER. **York S.E. and N.E.**

Pallas's Sand Grouse [*Syrrhaptes paradoxus*] **in Holderness** [and at Burniston near Scarborough; details of numerous specimens, with notes on habits, food, etc.; *Sterna minuta* at Spurn referred to]. Zool., June 1888, xii. 234.

R. P. HARPER. **York N.E.**

The Re-appearance of Pallas's Sand Grouse [*Syrrhaptes paradoxus*] **in the British Islands** [near Scarborough, May 28th, flocks of eight and nearly twenty]. Zool., July 1888, xii. 263.

R. P. HARPER. **York N.E.**

White Stork [*Ciconia alba*] **at Scarborough** [found floating dead on the sea near Peasholm, 8th April]. Zool., July 1888, xii. 269.

R. P. HARPER. **Lanc. W., York S.E.**

Notes on Birds in Lancashire [*Eudromias morinellus* (three trips) *Ægialitis hiaticula*, *Tringa alpina*, *Strepsilas interpres*, *Numenius phæopus*, *Calidris*, *Sterna minuta*, *Cuculus*, and *Anas boschas*, all noted about Lytham, Blackpool, Fleetwood and Knot-end, Crossens, etc.; and a Spurn note on *Strepsilas*]. Zool., Aug. 1888, xii. 310-311.

J. W. HARRISON. **Linc. N.**

Pallas's Sand Grouse [*Syrrhaptes paradoxus*] **in North Lincolnshire** [one shot out of twenty at Goxhill, Oct. 23rd]. Field, Oct. 27th, 1888, p. 625.

J. W. Harrison. **Linc. N.**

Pallas' Sand-Grouse [*Syrrhaptes paradoxus*] **in Lincolnshire** [one shot out of a flock, Goxhill parish, Oct. 23rd, 1888]. Nat., Dec. 1888, p. 354.

J. E. Harting. **Tees Mouth.**

Small Birds assisted on their Migrations by Larger Ones [quoting T. H. Nelson's observations as to *Asio accipitrinus* and *Regulus cristatus* at Teesmouth]. Field, March 31st, 1888, p. 460.

J. E. Harting. **York S.E. and N.E., Notts.**

On the re-appearance of Pallas's Sand Grouse [*Syrrhaptes paradoxus*] **in the British Islands** [brief particulars of numerous Yorkshire and a Notts. occurrence]. Zool., June 1888, xii. 234.

J. E. Harting. **York S.E. and N.E., Linc. N., Notts.**

The Reappearance of Pallas's Sand-Grouse [*Syrrhaptes paradoxus*] **in the British Islands** [recapitulating dates, etc., of eleven North-country records]. Field, June 2nd, 1888, p. 797.

G. E. Hastings. **York S.W.**

Cuckoo[*Cuculus canorus*]**'s Eggs** [at Brierley Common, in nests of *Anthus pratensis*, June 1st, 1888]. Nat. Hist. Journ., Oct. 15th, 1888, xii. 167.

Thos. H. Hedworth. **Durham.**

Nesting of the Hawfinch [*Coccothraustes vulgaris*] **near Newcastle** [at Axwell Park; three nests]. Nat., Aug. 1888, p. 234.

Thos. Heeman. **Lanc. S.**

Snipe [*Gallinago coelestis*] **caught in a Pole Trap** [at Risley, Lancs., 9th April, 1888]. Field, April 14th, 1888, p. 536.

J. M. Hick. **Northumberland S.**

Address to the Members of the Tyneside Naturalists' Field Club . . . May 16th, 1887 [notes on field meetings: *Lagopus scoticus*, *Totanus calidris*, *Gallinago coelestis*, *Charadrius pluvialis*, *Numenius arquata*, *Larus ridibundus*, *Anas boschas*, and *Turdus torquatus* at Whinnetly Moss and Broomlee Lough]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, Part 1 (1888), p. 4.

John F. Hills, Secretary. **'York.'**

York, Bootham. Natural History Club [records of first *Cuculus*, April 30th, last *Turdus pilaris*, May 1st, 1888; Nesting of *Regulus cristatus*, *Columba œnas*, and *Acredula rosea*, all near York]. Nat. Hist. Journ., June 15th, 1888, xii. 111.

W. Hodgson. **Cumberland.**

Remarkable Flight of Birds on the Solway [at Flimby, Dec. 12th, 1886; composed of *Alauda arvensis*, *Sturnus*, *Turdus iliacus*, *Vanellus*, and *Charadrius pluvialis*; details and estimates of numbers given]. Nat., March 1888, p. 80.

Hugh R. Hornby. **Lanc. W.**

The Present Visitation of Sand-Grouse [(*Syrrhaptes paradoxus*); four shot out of a flock of five, peat-moss near St. Michael's-on-Wyre, Garstang, 'Wednesday last' (before 28th May)]. Field, June 2nd, 1888, p. 797.

H. Knight Horsfield. **York Mid W.**

Reed Warbler [*Acrocephalus streperus*] **nesting in the Washburn Valley** [July 1888]. Nat., Nov. 1888, p. 330.

H. Knight Horsfield. **York Mid W.**

Rough-legged Buzzard [*Archibuteo lagopus*] **at Meanwood,** Leeds [shot Nov. 6th, 1888]. Nat., Dec. 1888, p. 353.

Saml. Hudson. **Linc. N.**

The Present Visitation of Sand-Grouse [(*Syrrhaptes paradoxus*) flock of five (one shot) on May 23rd, near Epworth]. Field, June 2nd, 1888, p. 797.

PETER INCHBALD. **? York S.E.**

Pellets disgorged by Hooded Crow [(*Corvus cornix*) described; locality not stated, probably Hornsea, whence note is dated]. Field, Jan. 28th, 1888, p. 117.

P. INCHBALD. **York S.E.**

Arrival of Summer Birds [at Hornsea Mere; *Hirundo*, April 17th; *Phylloscopus trochilus* and *P. rufus*, April 16th]. Field, April 21st, 1888, 547.

PETER INCHBALD. **York S.E.**

Great Crested Grebe [*Podiceps cristatus*] **in Yorkshire** [breeding regularly on Hornsea Mere]. Zool., Aug. 1889, xii. 304.

PETER INCHBALD. **York S.E.**

Spotted Crake [*Porzana maruetta*] **in Holderness** ['telegraphed' between Hornsea and Beverley, 21st Sept. 1888]. Zool., Nov. 1888, xii. 431.

J. A. JACKSON. **Lanc. W. and S.**

Notes on the Lapwing [*Vanellus vulgaris*] **near Garstang** [its habits, nidification, folk-names, folk-lore, etc.]. Nat., Sep. 1888, pp. 269-275.

PHILIP M. C. KERMODE. **Isle of Man.**

The Re-appearance of Pallas's Sand Grouse [*Syrrhaptes paradoxus*] **in the British Islands** [two Manx occurrences; Lhan, 22nd May, eight seen; Ballaskeg, Maughold, fifteen seen, 28th May]. Zool., July 1888, xii. 265.

E. PONSONBY KNUBLEY. **York Mid W.**

The Irruption of Pallas' Sand-Grouse [*Syrrhaptes paradoxus*] . . . Boroughbridge [Yorkshire, 20th June, between Minskip and Staveley]. Nat., Aug. 1888, p. 222.

F. A. LEES. **York N.W.**

Unusual Nesting-site for Missel Thrush [(*Turdus viscivorus*) in Upper Wensleydale; in stone walls or rock-fissures]. Nat., Sep. 1888, p. 264.

LORD LEWISHAM. **Notts.**

Chantrey's Woodcocks [(*Scolopax rusticola*); at Holkham (not Clumber as sometimes stated), Sir F. Chantrey killed two at a shot, then carved them in marble bas-relief, which is now at Holkham]. Field, Jan. 28th, 1888, 107.

THOMAS LISTER. **York S.W.**

South Yorkshire Notes [Jan. 2nd to Aug. 28th, 1886; *Turdus viscivorus*, *Charadrius pluvialis*, *Vanellus*, *Turdus merula*, *Pyrrhula*, *Alauda arvensis*, *Dendrocopus major*, *Crex*, *Saxicola*, *Turdus musicus*, *Parus major*, *P. ater*, *P. caeruleus*, *Erithacus*, *Accentor*, *Anthus*, *Troglodytes*, *Larus ridibundus*, *L. canus*, *Asio otus*, *Hirundo*, *Chelidon*, *Linota flavirostris*, *Sterna fluviatilis*, *Syrnium aluco*, 'Wood Owl,' *Gecinus*, 'Black-spotted Woodpecker,' *Caprimulgus*, *Cotile*, *Coccothraustes*, *Cuculus*, and *Phylloscopus trochilus* noted]. Nat. Hist. Journ., Sep. 15th, 1886, p. 131.

J. E. WALLIS LOFT. **Linc. N.**

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*) at High J[T]oynton near Horncastle, at Cawkwell near Louth, in Swallow parish, and in Irby parish]. Field, June 9th, 1888, p. 840.

J. E. WALLIS LOFT. **Linc. N.**

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*) at Fulston and at Skidbrooke, both near Louth]. Field, June 30th, 1888, p. 935.

R. LOFTHOUSE. **York N.E., Northumb. S.**

Sand Grouse [(*Syrrhaptes paradoxus*) at Redcar, Marske, Scarborough, Lackenby, Middlesbrough, Darlington, Port Clarence, Grosmont, and at Cragside, Northumberland]. Field, June 23rd, 1888, p. 201.

P. MACLAGAN. **Cheviotland.**

Cuckoo [*Cuculus canorus*] **in Berwick Town** [May 1st, 1888; details]. Nat., Aug. 1888, p. 222.

H. A. Macpherson. **?Cumberland.**

The Long-tailed Duck [(*Harelda glacialis*); note on variation]. Zool., Feb. 1888, xii. 66.

H. A. Macpherson. **Cumberland.**

Grey Shrike [*Lanius excubitor*] **in Cumberland** [two examples in winter of 1887-8]. Zool., May 1888, xii. 185.

H. A. Macpherson. **Cumberland.**

The Present Visitation of Sand-Grouse [(*Syrrhaptes paradoxus*) reached Cumberland, 22nd May, 1888]. Field, June 2nd, 1888, p. 797.

H. A. Macpherson. **Cumberland.**

Pallas's Sand-Grouse [(*Syrrhaptes paradoxus*) and probability of its nesting near Carlisle]. Field, June 9th, 1888, p. 840.

H. A. Macpherson. **Cumberland, Furness.**

Pallas's Sand-Grouse [(*Syrrhaptes paradoxus*) in Cumberland and at Walney]. Field, June 16th, 1888, p. 854.

H. A. Macpherson. **Cumberland.**

The Re-appearance of Pallas's Sand Grouse [*Syrrhaptes paradoxus*] **in the British Isles** [nineteen killed in Cumberland; two hens incubating]. Zool., July 1888, xii. 265.

H. A. Macpherson. **Cumberland.**

Gyrfalcons [*Hierofalco gyrfalco*, *H. candicans*, and *H. islandus*] **in the Lake District** [supplementary to John Watson's paper; and further particulars]. Nat., Aug. 1888, p. 223.

H. A. Macpherson. **Cumberland, Westmorland.**

The Ornithology of Skiddaw, Sca Fell, and Helvellyn [in criticism of John Watson's notes; *Tringoïdes*, *Falco peregrinus*, *Charadrius pluvialis*, and *Phalacrocorax graculus* referred to]. Nat., Aug. 1888, p. 242.

H. A. Macpherson. **Cumberland.**

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*) and their inhospitable reception in Cumberland]. Field, Aug. 11th, 1888, p. 228.

H. A. Macpherson. **Cumberland.**

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*) in Cumberland; several shot in November]. Field, Nov. 24th, 1888, p. 759.

Jas. Eardley Mason. **Linc. N.**

Pied Flycatcher [*Muscicapa atricapilla*] **near Alford,** Lincolnshire [a male seen, April 1888]. Nat., June 1888, p. 160.

Jas. Eardley Mason. **Linc. N.**

Osprey [*Pandion haliaëtus*] **near Alford** [shot at Chapel Marsh, 3rd May, 1888]. Nat., Sept. 1888, p. 276.

E. N. Mennell, N. Neeve, and F. G. Fryer. **York N.E.**

[Stork (*Ciconia alba*) **seen on Scarborough Mere,** 6th June, 1886]. Nat. Hist. Journ., Sept. 15th, 1886, p. 126.

F. S. Mitchell. **Lanc.**

Reported Occurrence of the Cream-coloured Courser in Lancashire [error of identification; the bird so recorded in the 'Birds of Lancashire' (p. 175) is *Vanellus gregarius* (Pall.), an addition to the British list]. Zool., Oct. 1888, xii. 389.

Thomas J. Moore. **Cheshire.**

Pallas's Sand-Grouse [(*Syrrhaptes paradoxus*) at Storeton in-Wirral, Cheshire; Liverpool museum also possesses an adult male from Hoylake, Cheshire, June 2nd, 1863]. Field, June 9th, 1888, p. 840.

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THOS. J. MOORE. **Cheshire.**

Pallas's Sand-Grouse [(*Syrrhaptes paradoxus*) at Storeton, Cheshire, nine seen May 27th]. Field, June 16th, 1888, p. 854.

S. L. MOSLEY. **York S.W.**

Annual Report, 1883 . . . Vertebrata [noting *Pastor roseus*, *Ampelis garrulus*, *Upupa epops*, *Cypselus melba*, *Falco æsalon*, *Cinclus* (Slaithwaite), and *Alcedo* for Huddersfield district]. Trans. Huddersfield Nat. Soc., Part 1 (pub. 1884?), p. 7.

S. L. MOSLEY. **York S.W.**

Annual Report, 1884 . . . Ornithology [records with particulars of *Mergus merganser*, *Fulica*, *Crex*, and *Caprimulgus*]. Trans. Huddersfield Nat. Soc., Part 2 (pub. 1885?), p. 9.

FLETCHER MOSS. **Lanc. S.**

Mistletoe not eaten by Birds [at Didsbury near Manchester; five species of *Turdus* avoided these berries even in severe weather]. Field, March 24th, 1888, p. 424.

FLETCHER MOSS. **Lanc. S.**

Mistletoe Berries not eaten by Birds [at Didsbury near Manchester; observations made upon *Turdi*]. Field, April 7th, 1888, p. 472.

NEWMAN NEAVE. **York N.E.**

A Stork [(*Ciconia alba*) fishing among some reeds in Scarborough Mere, 10th June, 1886]. Nat. Hist. Journ., Sep. 15th, 1886, p. 131.

T. H. NELSON. **York N.E.**

Ornithological Notes from Redcar [for 1887; *Tringa subarquata*, *T. minuta*, *T. canutus*, *Squatarola*, *Harelda*, *Lomvia troile* (also ringed and white), *Alca torda*, *Falco peregrinus*, *Circus cyaneus* (Egton Bridge, April), *Sterna*, *Calidris*, *Strepsilas*, *Numenius phæopus*, *Puffinus anglorum*, *Hydrochelidon nigra*, *Limosa lapponica*, *Puffinus major* or *griseus*, *Stercorarius crepidatus*, *Querquedula crecca*, *Anas boschas*, *Tringa alpina*, *Alauda arvensis*, *Plectrophanes*, *Otocorys*, *Sterna cantiaca*, *Corvus cornix*, *Colymbus glacialis*, *Larus glaucus*, *Mareca*, *Stercorarius pomatorhinus*, *Regulus cristatus*, *Scolopax rusticola*, *Asio accipitrinus*, *Œdemia fusca*, *Œ. nigra*, *Fulmarus glacialis*, *Vanellus*, *Fringilla cœlebs*, *Erithacus*, *Turdus merula*, *T. torquatus* (shot in Bilsdale, Oct. 25th), *Colymbus septentrionalis*, *Dendrocopus major*, *Anseres* and *Cygnus* noted]. Zool., April 1888, xii. 135-138.

T. H. NELSON. **Durham, York N.E.**

Pallas's Sand-Grouse [(*Syrrhaptes paradoxus*) a fine female washed up between Redcar and Marske, 25th May; flock seen on Coatham marshes; six seen near Bishop Auckland, June 3rd]. Field, June 6th, 1888, p. 840.

T. H. NELSON. **York N.E., Isle of Man.**

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*) at Teesmouth, Saltburn, Marske, Redcar, Hinderwell, Ruswarp, Whitby, and Isle of Man]. Field, June 30th, 1888, p. 935.

T. H. NELSON. **York N.E.**

Pallas's Sand Grouse [*Syrrhaptes paradoxus*] **in North Yorkshire** [numerous Redcar, Teesmouth, and Cleveland occurrences detailed]. Zool., Aug. 1888, xii. 298.

T. H. NELSON. **Durham.**

Pallas's Sand Grouse [*Syrrhaptes paradoxus*] **in Durham** [six between Bishop's Auckland and Byers Green, 3rd June]. Zool., Aug. 1888, xii. 299.

T. H. NELSON. **Isle of Man.**

Pallas's Sand Grouse [*Syrrhaptes paradoxus*] **in the Isle of Man** [large flock of about fifty, early June]. Zool., Aug. 1888, xii. 300.

T. H. Nelson. **Durham, York N.E., Isle of Man.**

The Irruption of Pallas's Sand-Grouse [*Syrrhaptes paradoxus*]. **Co. Durham** [near Bishop Auckland]. . . . Isle of Man [in July]. . . . Cleveland, Yorkshire [numerous instances cited, with particulars]. Nat., Aug. 1888, p. 221-222.

T. H. Nelson. **York N.E.**

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*); male and female shot on Kirkleatham estate, Redcar, about 13th Nov.]. Field, Dec. 1st, 1888, p. 801.

J. O. Nicholson. **Linc. N.**

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*) at Stanwill near Brigg, flocks of ten and five, July 27th and May 4th]. Field, Aug. 4th, 1888, p. 190.

Rd. Paver-Crow. **York Mid W.**

The Irruption of Pallas' Sand-Grouse [*Syrrhaptes paradoxus*] . . . Nidderdale, Yorkshire [two near Darley, early in June 1888]. Nat., July 1888, p. 199.

J. H. Payne. **York S.W.**

Do Rooks [*Corvus frugilegus*] **like being shot?** [with notes on them as observed since 1846 at Newhill Hall near Rotherham]. Nat. Hist. Journ., Sep. 15th, 1886, p. 130.

Alfred Pease. **York N.E.**

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*); note of three Cleveland examples]. Field, Oct. 27th, 1888, p. 625.

Jno. Philipson. **York N.W., Durham, Cheviotland.**

Address to the . . . Tyneside Naturalists' Field Club . . . May 9th, 1888 [notes of field excursions: *Charadrius pluvialis* at Cronkley Fell, 27th June, 1887; *Ardea cinerea* at Langleyford, Sep. 16th, 1887]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, part 1 (1888), pp. 185 and 192.

Edward S. Pickard. **Cumbld., Westmld., Furness.**

Birds in the Lake District [observed during nine days early in July 1888; *Pratincola rubetra*, *Ruticilla phœnicurus*, *Motacilla raii*, *Tringoides*, *Cinclus*, *Turdus torquatus*, *Cypselus*, *Larus ridibundus*, *L. canus*, *Falco peregrinus*, *Buteo vulgaris* (locally named 'Gledes'), *Corvus corax*, and *Lagopus scoticus*; numerous localities stated]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 180.

T. N. Postlethwaite. **Cumberland.**

A Morning at the Fly-nets [in Duddon estuary near Hodbarrow, Cumberland; noting *Anas boschas*, *Tadorna*, *Totanus calidris*, *Numenius arquata*, *Hæmatopus*, *Tringa alpina*, and *Phalacrocorax carbo*]. Zool., May 1888, xii. 190.

T. N. Postlethwaite. **Cumberland.**

Curiosities in Nesting [observed in Cumberland; *Corvus monedula* (variation of eggs); *Gallinula chloropus* (benefit by experience); *Cinclus aquaticus* and *Sturnus vulgaris* under a noisy railway-bridge]. Zool., Aug. 1888, xii. 308.

Charles Potter. **Lanc. W.**

The Buzzard [(*Archibuteo lagopus*); **recently trapped** in 'Wyresdale, Yorkshire'; surely Lancashire?]. Research, July 1888, p. 13.

Herbert Prodham. **York N.E.**

The Irruption of Pallas' Sand-Grouse [*Syrrhaptes paradoxus*] . . . Pickering, Yorkshire [at Allerston, 3rd and 5th June, 1888; details given]. Nat., July 1888, p. 199.

W. H. St. Quintin. **York N.E.**

The Preservation of Indigenous Animals [as instanced by readiness of *Tinnunculus*, *Strix flammea*, *Syrnium aluco*, *Gecinus viridis*, *Dendrocopus major*, *Certhia*, *Sitta*, *Muscicapa grisola*, *Ruticilla*, *Motacilla lugubris*,

M. melanope, *Pyrrhula*, *Columba œnas*, *C. palumbus*, *Ardea cinerea*, *Fulica*, *Gallinula chloropus*, *Alcedo*, *Anas boschas*, and *Querquedula crecca* (all wild), and *Chaulelasmus*, *Fuligula cristata*, *F. ferina* (pinioned) to accept the shelter given on the Scampston Estate; dates of occurrence given for *Loxia curvirostra* and existence of *Athene noctua* not far away descended from imported examples]. Field, Sept. 1st, 1888, p. 316.

P. Ralfe. **Isle of Man.**

Black Guillemot [*Uria grylle*] **in the Isle of Man** [where it still breeds, and in 1886 was very numerous on the west coast]. Zool., Nov. 1888, xii. 429.

R. H. Read. **Cheviotland, Northumberland.**

British Birds, their nests and eggs [report of lecture (p. 6) on the protective resemblance shown by Golden Plover (*Charadrius pluvialis*)'s eggs on a Northumbrian moor; (p. 7) Guillemots (*Lomvia troile*) on the Pinnacle Rocks, Farne Islands]. Ann. Rep. Ealing Micr. and Nat. Hist. Soc. for 1887-8: Ealing [Middlesex], 1888, pp. 6 and 7.

J. W. Reffitt. **York Mid W.**

Simultaneous Brooding by Cock and Hen Partridge [(*Perdix cinerea*) near Otley]. Field, July 28th, 1888, p. 125.

L. Richardson. **Northumberland S.**

The Ascent of Cross Fell, Ap. 26th, 1886 [*Larus ridibundus* noted between Hexham and Haltwhistle, near where they breed; on Cross Fell were noted *Numenius arquata* and *Charadrius pluvialis*]. Nat. Hist. Journ., Feb. 15th, 1888, pp. 13-14.

A. Robson. **Cheviotland.**

Large Sitting of Partridge [*Perdix cinerea*] eggs [at Eslington Park, 28, all hatched]. Field, Oct. 20th, 1888, p. 556.

Alfred Rowntree. **York N.W.**

A Wild Swan [*Cygnus* . . . **shot at Loch-a-Tarn** (Wensleydale), about 300 ft. above Carperby]. Nat. Hist. Journ., Feb. 15th, 1888, p. 24.

A. S. Rowntree. **York Mid W.**

[**Bullfinches** (*Pyrrhula europæa*) **at Copmanthorpe** Wood reported; an unusual bird near York]. Nat. Hist. Journ., March 15th, 1888, xii. 42.

A. S. Rowntree. **York N.E.**

York, Bootham.—May 3rd [**at Grimston,** nests and eggs of *Regulus cristatus* and *Acredula rosea*]. Nat. Hist. Journ., June 15th, 1888, xii. 113.

A. S. Rowntree. **York N.E.**

York, Bootham [**June 14th, Excursion to Scarborough,** nests of *Muscicapa grisola* and *Pyrrhula europæa*]. Nat. Hist. Journ., Sept. 15th, 1888, xii. 136.

Howard Saunders. **All the Counties.**

An Illustrated Manual of British Birds . . . with illustrations of nearly every species [in monthly parts; Parts 1 to 9, April to Dec. 1888, from *Turdus viscivorus* to *Ardea alba*; the limited space for each species, two pages only, precludes more than brief indications as to distribution, and only in the case of the very rarest occurrences are localities given]. London: Gurney & Jackson, 1, Paternoster Row [8vo., pp. 1-360].

[P. L.] Sclater. **Cheviotland.**

[**Syrrhaptes paradoxus; one captured alive,** May 28th, 1888, at West Foulden, Berwick-on-Tweed, and sent to Zoological Gardens]. Proc. Zool. Soc., May 15th, 1888, p. 291 (also 413).

H. H. Scott. **Cheviotland.**

Bird Pests of the Farm [as observed at Hipsburn, Lesbury, Northumberland; *Corvus frugilegus*, *Perdix cinerea*, *Lagopus scoticus*, *Passer domesticus*, *Columba palumbus*, treated of; and additional notes by R. J. Graham Simmonds, and by Gilbert Millar, Harehope, near Alnwick]. Zool., Oct. 1888, xii. 375-377.

H. SEEBOHM. **Cheviotland.**

[Young Lesser White-fronted Goose (*Anser albifrons*) shot Sep. 1886 on Holy Island]. Proc. Zool. Soc. Lond., Nov. 16th, 1886; Land and Water, Nov. 27th, 1886, p. 531.

A. C. SPENCE. **York S.E.**

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*); a large flock midway between Beverley and Driffield]. Field, July 21st, 1888, p. 86.

THOMAS STEPHENSON. **York N.E.**

The Irruption of Pallas' Sand-Grouse [*Syrrhaptes paradoxus*] . . . Whitby, Yorkshire [28th May, 1888, male and female shot out of twenty; note of former occurrence]. Nat., July 1888, p. 199.

THOS. STEPHENSON. **York N.E.**

Sand-Grouse [*Syrrhaptes paradoxus*] **near Whitby**, Yorkshire [six shot out of a flock of about 60, between Lealholm Bridge and Stonegate, June 1888]. Nat., Oct. 1888, p. 297.

T. STEPHENSON. **York N.E.**

Black Guillemot [*Uria grylle*] **near Whitby** [shot off Sandsend, 30th August, 1888]. Nat., Nov. 1888, p. 330.

THOMAS STEPHENSON. **York N.E.**

Whitby Bird-notes [for Nov. 1888; *Clangula glaucion*, *Somateria mollissima*, and *Larus marinus*]. Nat., Dec. 1888, p. 353.

C. E. S[TOTT]. **Lanc. S.**

House Martins [*Chelidon urbica*] **perching on Trees** [not unusual at Lostock near Bolton]. Field, Sept. 1st, 1888, p. 316.

THOS. R. SUMMERSON. **Durham.**

Swifts [*Cypselus apus*] **flying at Night** [at Gainford Green and Haughton-le-Skerne, they retired at nine p.m. Gilbert White's observations compared]. Field, June 30th, 1888, p. 936.

JAMES SUTTON. **Northumberland S.**

Pallas's Sand Grouse [*Syrrhaptes paradoxus*] **in Northumberland** [several sent; information vague]. Zool., Aug. 1888, xii. 299.

EDWARD TANDY. **Cumberland.**

Grey Shrike [*Lanius excubitor*] **in Cumberland** [obtained at Woodside, 28th Jan.; editor appends note from Macpherson and Duckworth's book]. Zool., April 1888, xii. 147.

J. TAYLOR. **Northumberland S., Cheviotland.**

Partridges [*Perdix cinerea*] **driven by foxhounds** [of the Morpeth Hunt, at Felton, on the Coquet, Feb. 4th, 1888]. Field, Feb. 18th, 1888, p. 209.

W. B. TEGETMEIER. **Notts., York S.E.**

Reappearance of Pallas's Sand Grouse [*Syrrhaptes paradoxus*] **in Europe** [with brief passing reference to the occurrences at Clifton, Notts, and Spurn, Yorkshire]. Field, May 26th, 1888, p. 763.

CYRIL E. TERRY. **Notts.**

Storm Petrel [*Procellaria pelagica*] **Inland** [one shot on Trent, Nov. 17th; now in Nottingham Museum]. Field, Nov. 24th, 1888, p. 759.

JOHN P. THOMASSON. **Lanc. S.**

Garden Warbler [*Sylvia hortensis*] **nesting at a height from the ground** [near Bolton]. Zool., Aug. 1888, xii. 306.

WALTER A. WARNE and C. DE VIT. **York N.E.**

Returning Swallows [(species not stated) **at Ayton**; disappeared very early, and after several weeks reappeared about 20th October, staying till 30th]. Nat. Hist. Journ., Nov. 15th, 1888, xii. 206.

ALBERT H. WATERS. **Yorkshire.**

Nature in March [with repetition of two Yorkshire records for *Turdus pilaris* given in Zool., Feb. 1886, and Zool., x. 298]. Young Nat., March 1888, ix. 60.

M. G. WATKINS. **Linc. N.**

[Late Stay of Swallows (*Hirundo rustica*); seen by writer in North Lincs., Nov. 3rd (? 1884)]. Angler's Note Book, Yellow Series, 1888, p. 96.

J. WATSON. **York N.W.**

Meteorological Notes [also notes on movements of *Turdus musicus*, *T. merula*, *Emberiza miliaria*, *Fringilla cælebs*, *Erithacus rubecula*, *Sturnus vulgaris*, *Corvus corax* (Ravens building), *Numenius arquata*, *Vanellus vulgaris*, and *Lagopus scoticus* near Sedbergh, Garsdale, and Grisedale in April 1888]. Wesl. Nat., May 1888, ii. 90-91.

JOHN WATSON. **Cumberland, Westmorland, Furness.**

The Ornithology of Skiddaw, Sca Fell, and Helvellyn [detailed notes on *Cinclus aquaticus*, *Turdus torquatus*, *Motacilla lugubris*, *Anthus pratensis*, *Saxicola œnanthe*, *Tringoides hypoleucos*, *Pandion haliaetus*, *Aquila chrysaëtos*, *Haliaetus albicilla*, *Falco peregrinus*, *F. œsalon*, *F. subbuteo*, *Linota flavirostris*, *Lagopus scoticus*, *Corvus corone*, *C. cornix*, *Turdus viscivorus*, *Plectrophanes nivalis*, *Eudromias*, *Charadrius pluvialis*, *Buteo vulgaris*, *Archibuteo*, *Phalacrocorax carbo*, *P. graculus*, *Larus ridibundus*, *L. fuscus*, *Numenius arquata*, and *Procellaria pelagica*; lists of vernacular names given at the end]. Nat., June 1888, pp. 161-169.

JOHN WATSON. **Cumberland, Westmorland, Furness.**

Notes on the Birds of the Lake District [details of occurrences of Greenland Falcon (*Falco candicans*), Iceland Falcon (*F. islandus*), and Peregrine (*F. peregrinus*)]. Nat., July 1888, pp. 201-202.

JOHN WATSON. **Cumberland, Westmorland.**

Extermination of Birds [*Eudromias morinellus*] **in the Lake District** [report of Petty Sessions Trial at Kendal]. Research, July 1888, p. 13.

E. W. WEST. **Derbyshire.**

The Siskin [*Chrysomitris spinus*] **in North Derbyshire** [five seen Dec. 7th, 1887; and eight on Jan. 10th, 1888, on banks of the Derwent; details given]. Field, Jan. 21st, 1888, p. 91.

J. A. WHELDON. **York S.E.**

Thrush Nest [notes on those of *Turdus musicus*, *T. torquatus* and *T. merula*; one of last-named on a pair of wooden steps hanging against a wall, at Heslingtoe(?n) Hall, near York]. Sci. Goss., Nov. 1888, p. 263.

J. WHITAKER. **Notts.**

[Pied] Variety of Common Wild Duck [(*Anas boschas*) caught in the decoy at Park Hall; now in Whitaker's collection; description given]. Land and Water, Dec. 25th, 1886, p. 640.

J. WHITAKER. **Notts.**

Varieties of Common Wild Duck [(*Anas boschas*) decoyed at Park Hall, first week of June 1888; described]. Zool., Feb. 1888, 3rd Series, xii. 68.

J. WHITAKER. **Notts.**

Sand Grouse [(*Syrrhaptes paradoxus*) at Clipstone Lings, Notts, June 14th: flight and habits described at length]. Field, June 23, 1888, p. 901.

J. WHITAKER. **Notts.**

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*) near Blidworth, June 19th, three seen]. Field, June 30th, 1888, p. 935.

J. WHITAKER. **Notts.**

Pallas's Sand Grouse [(*Syrrhaptes paradoxus*) in Notts; notes on habits, food and probable breeding]. Field, July 7th, 1888, p. 5.

J. WHITAKER. **Notts, York S.E. and N.E.**

Sand Grouse [*Syrrhaptes paradoxus*] **in Notts** [still about; also at Filey and Bridlington]. Field, Sep. 22nd, 1888, p. 433.

J. WHITAKER. **Notts.**

Late Brood of Wild Ducks [(*Anas boschas*) at Rainworth Lodge; fifteen young on 29th Oct.]. Field, Nov. 10th, 1888, p. 680.

J. WHITAKER. **Notts.**

Crossbills [*Loxia curvirostra*] **in Notts** [at Rainworth, probably breeding there]. Field, Dec. 1st, 1888, p. 801.

J. WHITAKER. **Notts.**

Note of the Jack Snipe [(*Limnocryptes gallinula*) as noted at Rainworth]. Field, Dec. 1st, 1888, p. 801.

J. WHITAKER. **Notts.**

A Good [16 oz.] Woodcock [(*Scolopax rusticola*) shot at Rainworth Lodge]. Field, Dec. 15th, 1888, p. 852.

MERYON WHITE. **York N.E.**

The Cuckoo [*Cuculus canorus*]**'s Change of Note** [as observed at Strensall Camp]. Field, July 21st, 1888, p. 86.

F. B. WHITLOCK. **Derbyshire, Notts.**

The Irruption of Pallas' Sand-Grouse [*Syrrhaptes paradoxus*] . . . Derbyshire [Breaston, May] . . . Nottinghamshire [Rainworth, June 14th]. Nat., Aug. 1888, p. 221.

F. B. WHITLOCK. **Derbyshire, Notts.**

Notes on the Reed Warbler [(*Acrocephalus streperus*) in the Mid-Trent Valley, as observed in 1888; details of habits and nidification; reference made also to *A. phragmitis*]. Nat., Dec. 1888, pp. 355-356.

F. B. WHITLOCK. **Notts.**

Manx Shearwater [*Puffinus anglorum*] **near Nottingham** [picked up alive at Bestwood, August 1888]. Nat., Dec. 1888, p. 356.

FREDERIC A. WRATHALL. **York N.E., York S.W.**

Birds of the Ayton District [a list of 89 species by their English names, with indications of faunistic position, comparative frequency, etc.; preceded by remarks on the district and upon some of the noteworthy birds; reference also made to Brockendale and Ackworth observations of *Columba œnas*]. Nat. Hist. Journ., Feb. 15th, 1888, xii. 1 to 5.

S. HENRY WRIGHT. **Notts.**

Sherwood Forest [in which the following birds are cited: *Anas boschas*, *Fulica*, *Querquedula crecca*, *Mareca*, *Fuligula ferina*, *F. cristata*, *Scolopax rusticola*, *Spatula*, *Tetrao tetrix*, *Circus cyaneus*, *Garrulus*, *Corvus corone*, and *Phasianus*]. Nat. Hist. Journ., Sep. 15th, 1886, pp. 113-117.

NOTES—MOLLUSCA.

Arion subfuscus Drap. **at Ingleton.**—I regret to find that in my list of the Land and Freshwater Mollusca of Ingleton, Clapham, and district, which appeared in the 'Naturalist' for April, I have omitted to record *Arion subfuscus*, which I collected near to Ingleton.—W. E. COLLINGE, Leeds, June 14th, 1890.

Clausilia rolphii at Well Vale near Alford.—Mr. J. Burtt Davy was good enough to send a number of shells and slugs collected by himself at Well Vale on the 12th of June inst. Mr. Taylor and I examined them, and were much interested to note a dead-example of *Clausilia rolphii*, with abundance of *Cl. laminata* and *Cl. rugosa*, a single dead *Cyclostoma elegans*, a dead *Helix lapicida*, and living examples of *Bulimus obscurus*, *Helix arbustorum* in plenty, *Arion subfuscus*, etc., 17 species in all. Mr. Davy was unable to find living *Cyclostoma* or *H. lapicida*, though the former is common dead.—W. DENISON ROEBUCK, Leeds.

ORNITHOLOGICAL NOTES FROM THE HUMBER DISTRICT, MAY 1890.

JOHN CORDEAUX, M.B.O.U.,
Great Cotes, Ulceby, Lincolnshire.

Merlin (*Falco æsalon*). May 10th. When taking nests of the Carrion Crow (*Corvus corone*) in the plantations and hedge-row timber to-day, we disturbed a Merlin, sitting on eggs in the old nest of a Crow, placed at the very top of a tall straight oak growing in an ash-holt, which stands on the edge of the marshes. Subsequently I watched for some time through the glass at half gunshot, the old male sitting on a tree-top near the nest. From the very retired position of the plantation I had good hopes that the young might be brought off, but this was not the case, for on returning a few days later, the tree had been climbed and the nest plundered.

Grey Plover and Dunlin. May 13th, N., slight. The beach at high water near Kilnsea Warren this morning was lined with countless waders—hundreds of Grey Plovers (*Squatarola helvetica*) and thousands of Dunlin (*Tringa alpina*), all in summer plumage. They were very restless, flying out to sea. A constant stream of drifting birds filled the field of my large telescope as long as I could hold it out. When the flights turned once more to the coast, the Grey Plover looked very much like floating discs—white above and black below—moving noiselessly down upon me. Later in the day as the tide receded, there was abundant opportunity to watch the waders through a glass as they sat grouped along the coast—the Dunlins so closely packed that they resembled sheets of brown velvet, with some sort of a grey pattern worked over them. One large flock of Grey Plover at rest, were very difficult to pick out individually, so nearly did they assimilate with the back-ground, a bank of rough shingle. All the flocks of Grey Plover were associated with Dunlins, but the two species were seldom actually mixed; where the one ended, the other commenced. I think most of this large assembly took their departure either that night or early in the morning, for I saw comparatively few after this. On the 15th the wind was west and squally, and I found nothing except a few noisy Turnstone and stray Whimbrel. This was a regular spring day—a play of sunshine and showers, with a rain-swept plain of cold grey water, transformed in a few seconds into glimmering sheets and shifting

breadths of lavender and pale green, changeful as a sapphire, and flecked with a thousand specks of broken foam, each lustrous as seagull's wing.

Turnstone (*Strepsilas interpres*). May 13th. Exceedingly abundant during the week in small parties on the sea and Humber side of the Spurn. The mellow and varied cry of the Turnstone is very difficult to render; sometimes it seems to resemble '*prit-pretty-dick*' at others a clear '*cher-ick, cher-ick.*' It is known as the 'Dotterel.'

Sanderling (*Calidris arenaria*). Fairly numerous on the 13th and following days; generally two or three together. One which I examined through the glass appeared in beautiful summer plumage—chestnut and shades of brown; others were very much in the same dress we find them in during the autumn.

Whimbrel (*Numenius phæopus*). Exceedingly plentiful and very tame, generally scattered and not in flocks. They are continually boring the loose and wet sand and frequently seem to draw out a short worm or slug which is quickly swallowed.

Oyster-catcher (*Hæmatopus ostralegus*). Seen and heard. As the tide flows, the Den, as it is called, on the Humber side (the site of Ravenserodd) is the last to be covered and is crowded with Whimbrel and Oyster-catchers, and very noisy they become when the rising water drives them to seek some other retreat. The shrill *pee-peep* of the latter may be heard at a great distance on this level coast.

Redshank (*Totanus calidris*). May 16th. One, to-day, very noisy and flitting to and fro above a marsh full of rough grass near Kilnsea, probably had a nest not far off.

Dotterel (*Eudromias morinellus*). May 15th. A shepherd (who well knows the birds) informs me that he saw three trips this morning, altogether about thirty birds, in their old quarters in this parish (Great Cotes). In 1889 they were seen in the same locality on the 14th May. In the Spurn district the local name is 'Land-Dotterel.'

Common Sandpiper (*Tringoïdes hypoleucos*). Fairly common on and near the coast on the 13th and subsequently.

Ringed Plover (*Ægialitis hiaticula*). I found a nest with four eggs on the 13th and again on the 17th. The first nest was on Kilnsea Warren, and partly hidden by three growing thistles; the eggs were grouped differently to any I have seen before, which is invariably with the narrow ends together, in this case thus:—

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which, if anything, seems an improvement on the normal manner of placing them.

Pied Flycatcher (*Muscicapa atricapilla*). Several at Spurn first week in May; Redstarts (*Ruticilla phœnicurus*) also, and up to the middle of the month.

Blackcap (*Sylvia atricapilla*). May 6th to 12th. Several on passage; also Garden Warbler (*S. hortensis*) seen and Willow Wrens (*Phylloscopus trochilus*).

Red-backed Shrike (*Lanius collurio*). A bird, presumably of this species, was seen near Easington during several days in the second week of May.

Grey Crow (*Corvus corone*). May 14th. A pair on Kilnsea Warren; a single one seen also on the 16th.

Rock Pipit (*Anthus obscurus*). A pair on the sand-hills near Kilnsea beacon.

Reed Bunting (*Emberiza schœniclus*). May 16th. Found a nest with five eggs in the bents. The female feigned lameness, and fluttered before me for a very considerable distance.

Swallow (*Hirundo rustica*). May 17th; Wind S., strong breeze. Large numbers, usually two and three together, with Martins (*Chelidon urbica*), Sand Martins (*Cotile riparia*), and a few Swifts (*Cypselus apus*), for many hours during day flying low down above the bents, continuously to south, taking the line of sand-hills to the point. None were observed returning or flying in a contrary direction.

Lesser Tern (*Sterna minuta*). Several pairs on 13th, and considerable increase during the week. It is surprising that the Spurn colony continues to exist, considering the ceaseless plundering of the nests which goes on year after year.

Turtle Dove (*Turtur communis*). May 17th. One seen by Mr. Hewetson at Skeffling. On the 22nd I heard one cooing in my garden at Great Cotes.

Linnet (*Linota cannabina*; local, 'Bent-Linnet'). Two beautiful nests in the bents, one with six, the other with three eggs. Later in the season the Spurn Linnets line their nests with the white feathers of the Lesser Tern.

Sand-Grouse (*Syrrhaptes paradoxus*). Mr. Hewetson has kindly sent the following note:—'May 24th, 1890. Mr. James Hopper of Spurn and David Pye of Easington (both of whom are familiar with Sand-Grouse) saw six coming in from the sea flying in a north-westerly direction—wind east at the time—whilst

half a mile off Spurn Light in their boat. They passed within thirty yards of the boat, and their peculiar cry was recognised. The birds were afterwards seen by others to alight on the sand-hills near the chalk banks, and they appeared very tired.' On Saturday, May 24th, eight were seen near the Humber in South Killingholme Parish, Lincolnshire.

Tree-Sparrow (*Passer montanus*). May 31st. We found the nest this afternoon, with the unusual number of seven eggs, built of dead grass and feathers, and placed inside the old nest of a magpie on the top of a Scotch fir in a plantation in this parish (Great Cotes).

NOTES—GEOLOGY.

Discovery of a Bone-Cave at Skirethorns near Grassington-in-Craven.—A few days ago, whilst in the neighbourhood of Grassington, I visited a newly-opened cavern at a place called Height, a solitary farm on the limestone hills about a mile west of the hamlet of Skirethorns. The farmer on whose land it is situated decided to open it out a week or two ago, as from the large opening (big enough for a horse and cart) there seemed appearances of an extensive cavern. It is filled with stiffish clay, and on digging this out quantities of bones were discovered embedded in it. What these exactly are I am unable to say. They have been carefully collected together, and consist apparently of the remains of foxes, deer, and skulls and bones of various extinct animals and birds; also a number of large well-preserved teeth were found, and several jaws in which the teeth are remarkably perfect. I entered the cavern and with the aid of a candle penetrated to the extremity of the excavations, about ten or a dozen yards, no great distance as yet; but there is every indication of the cave extending to a considerable distance into the hill. The passage into it is not more than three feet high, but may be enlarged, as the present floor seems of deep clay. The small cliff in which it is situated runs north and south, and the entrance to it faces the west. The altitude is about 1,200 ft. above sea-level.—H. Speight, West Bowling, Bradford, June 16th, 1890.

The Basement Carboniferous Conglomerate at Ullswater.—The basement conglomerate of the Carboniferous in the Lake District ('Old Red Sandstone" of some authors) is largely developed in the district north of Ullswater, reaching in Mell Fell a thickness of 1,000 or 1,200 ft. Any information regarding its included pebbles will be of interest, as helping to determine how far the older rocks were exposed by denudation at the beginning of the Carboniferous period, and what was the direction from which the materials were derived. There is an excellent exposure on the shore of the lake, under Dunmallett, near Pooley Bridge. A brief search here was enough to show that the great majority of the pebbles (not less than 95 per cent.) are of a grey or greenish-grey grit, closely resembling the Coniston Grit. Next in abundance come rocks referable to the Volcanic Series (the so-called Borrowdales). These are chiefly represented by various agglomerates of moderate coarseness and dirty-reddish or purplish-brown colours; but there were also found specimens of a breccia, enclosing angular fragments of pink rhyolite in a dark ashy matrix, a compact fine ash with small concretionary ovoid spots ('birdseye'), a rhyolite, a dark compact andesite containing little glassy prisms of felspar, and other rocks—all of types well known in the Volcanic Series of the central Lake District. A compact dark-blue pebble of Coniston Limestone containing numerous *Beyrichia* also occurred.

The pebbles are mostly well rounded, and range up to as much as two feet in diameter. Some of the grits, especially the smaller pebbles, are rather oblong in form. These have a laminated structure, and are often stained red or banded with stripes of red and grey.—A. Harker, St. John's College, Cambridge, 2nd June, 1890.

THE YORKSHIRE NATURALISTS' UNION AT LOWTHORPE NEAR DRIFFIELD.

On Whit-Monday last, May 26th, 1890, the Yorkshire Naturalists' Union held its eighty-fourth meeting, the first of the season. The place selected was Driffield, for the investigation of Lowthorpe, Ruston Parva, and the valley of the Kelk Beck from Lowthorpe Station to Kilham. Permission for the investigation of their estates had been handsomely granted by Mr. W. H. St. Quintin, M.B.O.U., and Mr. John Dickson. The weather, by no means a secondary consideration on an excursion, was not all that could be desired, and vividly reminded one of the excursion on the previous Whit-Monday, when a similar state of things prevailed at Holmfirth. At the outset the sky was dull and overcast, and slight rains fell at intervals in many parts of the county.

> The farmers grew impatient, but a few confessed their error,
> And would not complain;
> For after all, the best thing one can do when it is raining
> Is to let it rain.

This threatening aspect of the weather no doubt deterred many members, and ladies especially, from taking part in the excursion. Those who did attend came provided with the inevitable mackintosh and umbrella. About noon, however, the sun struggled forth, and by the time the members arrived at Lowthorpe Station it was blazing in an almost cloudless sky. Here the majority of the members left their various impedimenta, including the aforesaid mackintosh and umbrella, and those who elected to carry these useful but cumbrous articles regretted later that they had not followed the example of their more venturesome companions. The party was met by several local members, and, now numbering about seventy, after a short consultation, proceeded under the leadership of Messrs. J. R. Mortimer, and L. B. Ross, F.C.S., in the direction of Ruston Parva.

The extensive woods to the right of Lowthorpe first claimed the attention of the party, which proceeded up the Kelk Beck Valley, occasionally crossing and recrossing the stream at the dictates or fancy of the leaders, until Brace Bridge was reached. Here the geologists diverged to inspect some chalk quarries at Ruston Parva, under the independent leadership of Mr. Mortimer, while the remainder confined their investigations to the more immediate vicinity of the stream. The majority of the members returned to Lowthorpe, whence they proceeded by train to Driffield, but a few journeyed on foot, passing through the little village of Nafferton, and eventually joining their fellow workers at Driffield.

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At 4.45 the ramblers sat down to tea at the Buck Inn, at which place the business of the meeting was transacted.

After the Sectional Meetings had been held, the General Meeting was opened at six o'clock, and presided over by Mr. N. F. Dobrée, F.E.S. (Beverley), President of the Entomological Section. The minutes of the foregoing meeting having been read and approved, the following eighteen new members were elected:—James L. Bell, M.D., Driffield; H. H. Corbett, M.R.C.S., Doncaster; J. Norton Dickons, Manningham; George Frank, Kirbymoorside; — Hodgson, Pickering; George Fowler Jones, Malton; John Nicholson, Pudsey; John H. Phillips, Scarborough; James Rhodes, Keighley; William Sparks, Driffield; J. W. Sutcliffe, Halifax; W. Y. Veitch, M.D., Middlesbrough; Robert Waddington, Driffield; John F. Walker, M.A., F.G.S., etc., York; Henry Waud, Darlington; J. A. Whitaker, Halifax; C. H. B. Woodd, London; Thomas W. Woodhead, Huddersfield.

The roll of affiliated societies was next called, to which representatives from the following responded:—Conchological Society, Dewsbury, Halifax, Hull (two Societies), Leeds (two Societies), Malton, Ovenden, Scarborough (two Societies), and York.

A vote of thanks was then passed, on the motion of Mr. J. W. Davis, F.G.S., seconded by Mr. M. B. Slater, F.L.S., to Messrs. W. H. St. Quintin, M.B.O.U., and John Dickson, for permission granted to visit their respective estates, to Messrs. Mortimer and Ross for conducting the various sections, and to the various contributors to the excursion-programme.

The following resolution was passed, on the motion of Mr. C. P. Hobkirk, F.L.S., seconded by the Rev. E. Maule Cole, M.A., F.G.S., and supported by Messrs. J. W. Davis, F.G.S., etc., and W. D. Roebuck, F.L.S.:—'That the Yorkshire Naturalists' Union desires to record its extreme regret at the loss sustained since the last meeting in the death of two of its most active and valued members—Mr. S. A. Adamson, F.G.S., Secretary of the Geological Section, and Mr. E. B. Wrigglesworth, a former Secretary of the Entomological Section; and that the Secretaries be requested to communicate accordingly with the relatives of the deceased gentlemen.'

The reports of the various sections were then given.

For the Vertebrate Section, Mr. Edgar R. Waite, F.L.S., Secretary, reported that the members attaching themselves to this section were chiefly under the leadership of Mr. Fredk. Boyes, Beverley, and numbered about a dozen, who confined their investigations mainly to the east side of the stream. The district appears to be a very promising one, and it is to be regretted that so little

time was available in which to endeavour to ascertain its fauna. The ground traversed was chiefly woodland, and as the trees were well into leaf many birds were hidden and it was frequently only by their note or song that their presence could be detected. Mr. St. Quintin's gamekeeper, who was with the section for a short time, pointed out some large ponds which he said had sometimes in winter as many as 300 wild ducks upon them; unfortunately he was unable to specify what species were to be met with although he said there were several kinds. It was soon evident that all was not to be plain sailing, for the ground became very boggy and few of the members escaped without sinking below the boot-tops. However, 'nothing venture, nothing gain,' and having once got wet it was no great trial to go in again and again. With respect to the birds a fair number was met with, but this would in all probability have been increased, had the ground traversed been of a more diversified nature. Many woodland birds, such as Thrushes and Warblers, were numerous, but the only Tits seen were the Blue and the Long-tailed Tits. A tall Spruce-fir was climbed to ascertain the nature of a little nest discovered among the topmost branches and some surprise was manifested when it was announced to be a Hedge Accentor's. In one place where the bog drained itself into a small pond nests of both Water-hen and Coot were found containing eggs, and one member was decidedly wet before he had satisfied his curiosity. After a long tramp the little party emerged from the wood and took to the fields, where other species were added to the list, including three Buntings, the Yellow, the rarer 'Common,' and the still rarer Reed Bunting. On nearing the Beck the Spotted Flycatcher was seen pursuing the vocation from which it takes its name, and the Swallow, Martin, Sand Martin, and Swift were also entomologising up and down the stream. On reaching Brace Bridge some little time was spent to advantage in the neighbourhood. A move was at length made for head-quarters, the majority of the section walking on to Lowthorpe, and taking train for Driffield, where they were joined shortly afterwards by the remainder, who had preferred walking and passed through Nafferton on their way.

The following is the complete list of Vertebrates recorded. The list of birds—42 in all—included 27 resident and 15 migrant species. The asterisks * denote that eggs and the daggers † that young birds were observed.

Mammals.	Birds.
Short-tailed or Field Vole.	*† Missel Thrush.
Rabbit.	*† Song Thrush.

*† Blackbird.
Whinchat.
*† Redbreast.
Whitethroat.
Blackcap.
Garden Warbler.
Goldcrest.
* Chiffchaff.
* Willow Warbler.
Sedge Warbler.
Grasshopper Warbler.
*† Hedge Accentor.
Long-tailed Tit.
Blue Tit.
* Wren.
Meadow Pipit.
* Tree Pipit.
Spotted Flycatcher.
Swallow.
Martin.
Sand Martin.
* Greenfinch.
* House Sparrow.
*† Chaffinch.
* Linnet.
Corn Bunting.
Yellow Bunting.
Reed Bunting.
Starling.
Jackdaw.
Rook.
Skylark.
Swift.
Cuckoo.
*† Ring Dove.
* Pheasant.
Partridge.
*† Waterhen.
* Coot.
*† Lapwing.

Reptiles.

Smooth Newt.
Frog.
Toad.

Fishes.

Trout and Minnow.

The report of the Conchological Section was given by its Secretary, Mr. L. B. Ross, F.C.S., Driffield, who stated that the section had been represented during the day by Messrs. F. W. Fierke and Brown, of Hull, who had spent the morning and forenoon in investigating the Driffield Canal, and were afterwards joined at Lowthorpe Station by Mr. Ross himself, Mr. J. Darker Butterell, of Beverley, Mr. W. Denison Roebuck, F.L.S., of Leeds, and other investigators. The day's research was not, however, very successful either in land or fresh-water mollusca. The Lowthorpe district cannot from its nature be regarded as a happy hunting-ground so far as the aquatic mollusca are concerned, there being an entire absence of those delightful old ponds, covered with vegetation and abounding in effete animal matter, so dear alike to the conchologist and the snail, and however charming the meandering trout stream may be to the angler, it is almost a blank to the conchologist. The rapid flow of its waters and the absence of vegetation militate against success, the only mollusc that seems to revel in it being the River Limpet (*Ancylus fluviatilis*), which is found attached to the stones in great numbers, several thousands being observed in one place. The conchologists next tried their dredges in the gravelly bed of a quieter portion of the stream near Brace Bridge, and fished up the little pea-shaped bivalves, *Pisidium pusillum* and *P. fontinale* var. *cinerea*; and again trying their luck, succeeded in bringing to the surface *Valvata*

piscinalis and *V. cristata*. *Physa fontinalis* and *Planorbis contortus* were found in the dam at Brace Bridge Mill. The slugs met with were *Arion bourguignati*, *Limax maximus*, and *L. agrestis*. The party were scarcely more successful in their search after terrestrial mollusca, probably owing to the time allowed being short. No very great number or variety rewarded their efforts, although probably many of the smaller species could have been met with in the woods had time allowed; but the district not having been previously worked, the local guides could render very little assistance in pointing out habitats, etc., a very necessary aid when time is short. The *Zonites* were represented by the following species, viz.:—*Z. cellarius*, *Z. alliarius*, *Z. fulvus*, *Z. nitidulus*, and *Z. crystallinus*, and the *Helices* by the following:—*Helix nemoralis* and var. *roseo-labiata*, *H. aspersa*, *H. hispida*, *H. rufescens*, and *H. cantiana*, the latter being abundant. *Vitrina pellucida*, *Bulimus obscurus*, *Carychium minimum*, and *Cochlicopa lubrica* were also found sparingly.

For the Entomological Section the report was given by its Secretary, Mr. J. H. Rowntree, of Scarborough, who remarked that the season was too little advanced for many insects to be on the wing, and although the sun shone brightly, a cold wind prevailed. The following imagos were recorded:—*Pieris brassicæ*, *P. rapæ*, *P. napi*, *Anthocharis cardamines*, *Vanessa urticæ*, *V. cardui*, *Cœnonympha pamphilus*, *Arctia lubricipeda*, and *Melanippe rivata*. Many larvæ were obtained by beating the hawthorn, the complete list being:—*Vanessa urticæ*, *Arctia caja*, *Odonestis potatoria*, *Rumia cratægata*, *Odontopera bidentata*, *Hybernia progemmaria*, *Cheimatobia brumata*, *Melanippe montanata*, *Diloba cæruleocephala*, and *Miselia oxyacanthæ*.

For the Botanical Section reports were given by Mr. Charles P. Hobkirk, F.L.S., of Dewsbury, President, and Mr. Matthew B. Slater, F.L.S., of Malton, Cryptogamic Secretary of the section. Mr. Hobkirk remarked that the botanists had chiefly confined their attention to the woods and rich bottoms on the east side of the Kelk Beck, with occasional incursions where practicable to the west bank, as far north as Brace Bridge. In the swampy ground nearest to Lowthorpe, *Iris pseudacorus* was found fairly plentiful and in good flower, also *Glyceria aquatica*, whilst in many parts of the beck *Potamogeton heterophyllus*, *P. crispus*, and *P. densus* were plentiful. In the various changing habitats of the journey 112 flowering plants and ferns were observed, amongst the most interesting of which, besides those already mentioned, were *Barbarea vulgaris*, *Hypericum quadrangulum*, *Anthyllis Vulneraria*, *Onobrychis sativa*, *Geum rivale*, *Potentilla Comarum*, *Poterium Sanguisorba*, *Hippuris vulgaris*,

Habenaria viridis, *Ranunculus pseudo-fluitans*, *Carex paniculata*, *C. paludosa*, etc., and *Teesdalia nudicaulis* was reported from near Market Weighton. Only three ferns were noted ; all common ones everywhere. Among the Cryptogamia, Mr. M. B. Slater, F.L.S., who had previously traversed part of the ground, had recorded 30 Mosses and 4 Hepatics, and most of these were noted during the day's ramble. Amongst the more interesting may be noted :— *Mnium punctatum*, *Amblystegium serpens*, *Orthotrichum Lyellii*, *Rhynchostegium confertum*, *Hypnum cuspidatum* c.fr. but with most of the capsules cut short off, probably by birds ; *Eurhynchium striatum*, *E. crassinervium*, *Climacium dendroides*, *Leucodon sciuroides*, *Homalothecium sericeum*, *Brachythecium plumosum*, *Eurhynchium piliferum*, *Zygodon viridissimus*, *Orthotrichum affine*, *O. diaphanum*, *Bryum capillare*, *Frullania capillare*, *Radula complanata*, *Lophocolea bidentata*, and *L. heterophylla*. *Cryphæa heteromalla* was reported by Mr. Slater as occurring near Sledmere on the west, and also on the east of Lowthorpe, but, strange to say, no trace of it could be found in the district investigated, though it was well searched for.

For the Geological Section its chairman (Rev. E. Maule Cole, M.A., F.G.S.,) and Secretary (Mr. S. Chadwick, F.G.S., Malton,) reported as follows :—In the Sectional Meeting the chair was taken by the President, the Rev. E. Maule Cole, M.A., F.G.S., who opened the proceedings by referring to the great loss which the Union had sustained by the premature death of the Senior Secretary of the section, Mr. Adamson, to whose graphic pen the Union was indebted for so many charming narratives of the excursions undertaken, and of the various localities and sections visited, and expressed his belief that it would be extremely difficult to find anyone, with similar gifts and enthusiasm, to supply his place. After congratulating the section on the exceptionally good muster of members, the President called on the Secretary, Mr. Chadwick, F.G.S., to make his report on the day's proceedings. The Secretary stated that the sections examined consisted of Boulder Clay and Chalk. The former extended over the whole district explored, and constituted the surface soil, whilst the chalk below was only visible in pits. The first chalk-pit visited was a large and deep one in the upper chalk without flints, at Ruston Parva, where specimens of the following fossils were obtained :—*Inoceramus*, *Avicula*, *Ananchytes ovatus*, *Holaster planus*, *Terebratula*, *Rhynconella*, *Belemnitella mucronata*, *B. quadrata*, *Verruculina plicata*, *V. convoluta*, *V. postulosa*. Here the Secretary took the opportunity of pointing out a peculiarity in the beds before them. He had found that the dissolved chalk from this pit produced very poor results, very few of the finer forms of foramini-

fera being met with. To explain this, it had been suggested to him, that the chalk here was not in its original position, but had been denuded, before consolidation, from some other part of the sea-bed, and possibly carried by currents a considerable distance. The rolling and exposure to which the foraminifera would in such a case be subjected, might account for the absence of the more minute shells, the larger and stronger ones alone remaining. The President said that the idea was new to him, and that he should require evidence from a more extensive area, before entertaining it. The Secretary next called attention to the fact that in the upper beds the various sponge spicules were represented by casts alone, whereas in the lower beds of the Upper Chalk they were found replaced with calcite. On resuming the walk, the party proceeded to a pit on Nafferton Wold, where a higher zone of the chalk was exposed to view, and found to contain *Ventriculites radiata*, *V. angustata*, *V. cribosa*, *V. convoluta*, *Seliscothon planus*, *Verruculina papillata*, *Belemnitella mucronata*, *B. quadrata*, *Scaphites inflatus*, *S. æqualis*, *Hamites*, etc.

Mr. Waite announced that Mr. J. R. Mortimer had invited the members to visit his museum, and proposed a vote of thanks to him for his kindness. This was seconded by Mr. J. W. Davis, and unanimously carried. A vote of thanks passed to the Chairman, on the motion of Messrs. W. Denison Roebuck and J. Thrippleton, terminated the meeting.

Afterwards a number of the members proceeded to inspect Mr. Mortimer's most admirably arranged museum of geology and archæology, and were much interested in the objects which he has brought together. Particularly attractive to the conchologists were some boxes of specimens of shells found in the ancient barrows on the Wolds, including *Helix nemoralis* in abundance, *H. arbustorum*, *Succinea putris* in numbers, and *Achatina acicula*, the latter being a species not recorded for the East Riding.—E.R.W.

In Memoriam.

The Bradford Naturalists' Society have sustained a heavy loss by the death of their President, Mr. George Hann. A clerk in the Inland Revenue, he had filled office in Glasgow, Brighton, Dorsetshire, Sheffield, and since May 1886 at Bradford. He joined the Bradford Naturalists' Society and the Bradford Scientific Association on his arrival from Sheffield, where he had previously done good service and made many friends. Botany was his favourite study, but he was also interested in various other branches of natural history. He was an enthusiastic worker in the field and a well-read man, with clear views on any subject he took up, coupled with a retentive memory. He held the office of President of the Bradford Naturalists' Microscopical Society during 1889, and as the office he held expired before the conversazione was held, the Society considered it was expressing itself but very inadequately for the services he rendered in connection by re-electing him for 1890. Since Easter he had been in very indifferent health, and died on the 12th May.

NOTES—ORNITHOLOGY.

Redshanks Breeding in Ripon Parks.—On June 13th I came across a pair of Redshanks (*Totanus calidris*) in Ripon Parks. From their movements they evidently had young in the neighbourhood.—RILEY FORTUNE, Harrogate, June 16th, 1890.

Albino Blackbird near Harrogate.—On June 2nd an albino Blackbird (*Turdus merula*), a beautiful specimen, white, with pink eyes, was captured near Beckwithshaw, Harrogate. It is a young bird, and is now caged and doing well.—RILEY FORTUNE, Harrogate, June 16th, 1890.

Breeding of Heron in Wensleydale, N. W. Yorks.—About the middle of April a pair of Herons (*Ardea cinerea*) commenced a nest in one of the rookeries between Carperby and Thornton Rust. The nest now contains three young birds, and is the first case of breeding of the Heron which has come under my notice in Wensleydale.—FRED CHAPMAN, Carperby, Wensleydale, June 5th, 1890.

Snipe's Nest with five eggs and Black and White Blackbird near Ripon.—On June 1st I found in Ripon Park a nest of the Snipe (*Gallinago cœlestis*) containing five eggs. I have seen quantities of Snipe's nests, but this is the first time I have found one with five eggs. They were only slightly incubated. The lateness of the date would lead one to infer that it was a second brood. On the same day we saw a black and white Blackbird near the town of Ripon.—R. FORTUNE, Harrogate, June 16th, 1890.

Notes on Migrants about Harrogate.—Landrails (*Crex pratensis*) are this year very scarce in the neighbourhood of Harrogate. During a twenty miles walk in an ideal country for these birds, we only heard two; in former years they have always been so plentiful. How can this scarcity be accounted for? Swallows (*Hirundo rustica*) and Martins (*H. urbica*) are, after a few years of great scarcity, beginning to regain their lost ground in this district. When the Wagtails (*Motacilla alba*) arrived this year they were noted to be unusually light in colour. Has this been noticed in any other district?—R. FORTUNE, Harrogate, June 16th, 1890.

Black-headed Gull at Walton near Thorp Arch.—Last evening a farm labourer of Mr. Blanshard's, Walton, brought me a young bird of this species (*Larus ridibundus*). It was noticed on the duck-pond, and seeing that it was a stranger, the man secured it, and was surprised to find that 'it had Duck's feet.' When brought to me it was in an exhausted and damaged condition, no doubt in consequence of the rough treatment which it had received. The bird is in its first plumage, and still retains some down about the head. It has, in all probability, been bred in the district. Strensall Common is the nearest known breeding-place, although but few pairs nest there now in what once was a common resort.—EDGAR R. WAITE, Walton Old Hall, near Thorp Arch, and The Museum, Leeds, 25th June, 1890.

Auction Sale of North of England Rarities.—The sale of Mr. Whitaker's duplicates at Stevens', Covent Garden, May 22nd, 1890, included a few scarce specimens from the northern counties of England, particulars of which may be useful.

YORKSHIRE.—Lot 31, a female Little Bittern (*Ardetta minuta*), from Mr. Fennell, obtained at Scalby Beck, North Harburn, Scarborough, May 16th, 1866.

Lot 38, a splendid Common Skua (*Stercorarius catarrhactes*), killed at Scarborough, Oct. 27th, 1866.

Lot 142, a Rose-coloured Pastor (*Pastor roseus*), obtained in Yorkshire by the late Mr. Allis.

NORTHUMBERLAND.—Lot 143, a fine skin of the Roseate Tern (*Sterna dougalli*), from the coast of this county.

Lot 39, a Storm Petrel (*Procellaria pelagica*), from Mr. Hancock, 1848.

LINCOLNSHIRE.—Lot 34, a Sclavonian Grebe (*Podiceps auritus*) in full breeding dress, from the Lincolnshire coast.

CUMBERLAND.—Lot 31, including two female Two-barred Crossbills (*Loxia bifasciata*), 1846.—H. A. MACPHERSON, 24th May, 1890.

SOME ADDITIONAL LOCALITIES AND NEW RECORDS FOR THE MOSSES OF NORTH YORKSHIRE AND SOUTH DURHAM.

R. BARNES.
The Gardens, Saltburn.

THE districts included under the above heading in which the localities given for the different species occur, consist mainly of the Upper and a portion of the Lower drainage area of the Tees and Swale, along with the north-east part of Cleveland.

Of the two former districts little need be said as to their bryological richness, since they yield, as is well known, some of our rarest and most interesting species.

During a few days spent in Upper Swaledale, in October 1889, the good fortune was afforded me, in the neighbourhoods of Gunnerside, Kisdon, and Keld, of meeting with the following species new to that part of North Yorkshire, viz.:—

Andreæa alpina Turn.
Gymnostomum commutatum Mitt.
Dicranella Schreberi Hedw.
Dicranella Schreberi var. *elata* Schpr.
Dicranella varia Hedw. var. *callistoma* Dicks.
Seligeria Doniana Sm.
Seligeria pusilla Hedw.
Seligeria acutifolia var. *longiseta* Lindb.
Seligeria tristicha Brid.
Didymodon cylindricus Bruch.
Didymodon sinuosus Wils.
Trichostomum crispulum, Bruch.
Trichostomum nitidum Lindb.
Barbula recurvifolia Schpr.
Barbula intermedia Brid.
Encalypta vulgaris Hedw. var. *pilifera* Funck.
Zygodon viridissimus Dicks. var. *rupestris* Lindb.
Zygodon Stirtoni Schpr.
Bryum alpinum L. var. *meridionale* Schpr.
Bryum concinnatum Spruce.
Fissidens decipiens DeNot.
Neckera pumila Hedw.
Anomodon longifolius Schleich.
Eurhynchium Teesdalii Sm.
Amblystegium Sprucei Bruch.
Hypnum polymorphum Hedw.
Hypnum stellatum Schreb. var. *protensum* Brid.
Hypnum stramineum Dicks.

In addition to the above, the following kinds, though previously noted to occur in other parts of Swaledale, are new to the Kisdon portion of it, viz.:—

Dicranum fuscescens Turn.
Ulota Drummondii Grev.
Bartramia ithyphylla Brid.
Zieria julacea Schpr.
Eurhynchium pumilum Wils.
Hylocomium brevirostrum Ehrh.

Hitherto, so far as that portion of Cleveland is concerned which extends from Guisbrough in a seaward direction, taking the glens of Saltburn, Kilton, Easington, and Roxby, very few records of

its moss-flora have been notified.' As will be seen from this list, the district yields a fair and adequate number of the rare and less common species, certain of which are new records for North Yorkshire, and some few for the county generally. In a few instances I have given records of some of the commoner species found in a state of fructification, but, of course, only those rarely met with in that condition; and in others, records of those of a montane character, easily recognised as having descended far from their usual habitats.

The subjoined list is offered to the readers of 'The Naturalist' rather as containing the additional localities cited, together with the new records already referred to, than as pretending to actual completeness.

Except when fully indicated, each locality is marked with the initial letter of its respective district—D. (Durham portion of Teesdale), T. (Teesdale—Yorkshire portion), S. (Swaledale), C. (Cleveland).

Those species marked with one asterisk are, to the best of my knowledge, new to North Yorkshire; and those with two, to Yorkshire generally.

My sincere thanks are hereby tendered to Dr. Braithwaite, F.L.S., for his kindness in examining and verifying, and in some cases even in determining, the species contained in this list. Without his help it would not have been prepared.

ACROCARPI.

SPHAGNACEÆ.

Sphagnum acutifolium Ehrh. var. **deflexum** Schpr. Green Fell (T.); Widdy Bank (D.).

Sphagnum acutifolium Ehrh. var. **rubellum** Wils. Ayton Moor (C.).

Sphagnum acutifolium Ehrh. var. **tenue** Braithw. Widdy Bank (D.); Gurtof Gill, near Boltby, Thirsk.

Sphagnum acutifolium Ehrh. var. **subfimbriatum** Braithw. Hutton Moor, Guisbrough (C.).

Sphagnum fimbriatum Wils. Moor above Slape Wath (C.); Lounsdale (C.); Gurtof Gill, near Boltby, Thirsk.

Sphagnum teres Angst. Widdy Bank (D.). Probably new to Durham county.

Sphagnum intermedium Hoffm. Guisbrough Moor (C.).

Sphagnum rigidum Schpr. var. **compactum** Brid. Lockwood Beck (C.).

Sphagnum subsecundum Nees var. **obesum** Wils. Widdy Bank (D.); Hutton Moor, Guisbrough (C.).

Sphagnum subsecundum Nees var. **auriculatum** Schpr. Moor above Slape Wath (C.).

Sphagnum tenellum Ehrh. Widdy Bank (D.); Cronkley Fell (T.); Lockwood Beck (C.); Easby Moor (C.).

ANDREÆACEÆ.

Andreæa petrophila Ehrh. Highcliff, Guisbrough (C.).

Andreæa alpina Turn. Kisdon Force (S.).

WEISSIACEÆ.

Gymnostomum tenue Schrad. Tolerably frequent in Cleveland on moist sandstone, and usually with fruit, as at Kilton, Roxby, Saltburn, Skelton, Slape Wath, and Upleatham. In the Tees district it occurs at Wycliffe, and on the south side of the river near Gainford, and also at Croft.

Gymnostomum rupestre Schwg. By the Tees, descending to Whorlton Bridge, Ovington, and Gainford.

With reference to the Cleveland locality for this plant (Hell Gill, Guisbrough Moor, recorded by the late Mr. W. Mudd in Baker's 'North Yorkshire'), the ironstone has been worked out there some time since, and the station, I believe, consequently destroyed; in fact, the character of the glen to all appearance has undergone a complete change.

***Gymnostomum commutatum** Mitt. This species, which in Dr. Braithwaite's Br. Moss-Flora is reduced to a variety of *Gymnostomum curvirostrum* Ehrh. (= *Barbula curvirostris* var. *commutata* (Mitt.) Lindb.) occurs in several localities with almost equal frequency to the type.

In the Tees district it descends on the south side of the river below Gainford, where it grows in great luxuriance and fruits abundantly. Since preparing the present list I have noticed an early record for *Gymnostomum curvirostrum* in Hooker's Br. Flora, ii, p. 8 (1833), by Mr. Backhouse (probably the late W. Backhouse of Darlington), which undoubtedly has reference to the above locality. I have also met with it and in fruit by Bowlees Beck, at Gibson's Cave, and at Falcon Clints, Teesdale (D.), and by the East Stonesdale Beck, Upper Swaledale.

Gymnostomum microstomum Hedw. On clay ground at Roxby (C.), and Saltburn (C.).

Weissia mucronata Bruch. By the side of the road between Grinkle Park and Loftus (C.); and on clay ground at Saltburn (C.), and Slape Wath (C.).

Rhabdoweissia fugax Hedw. Cronkley Scars (T.).

Rhabdoweissia denticulata Brid. High Force (T.); Unthank Scars (T.); Falcon Clints (D.).

I find no mention of this species or the above in either 'North Yorkshire' or Spruce's 'Musci and Hepaticæ of Teesdale.' If they have been elsewhere recorded I am unaware of the fact.

Cynodontium Bruntoni B. & S. On sandstone rock on the Kildale side of Easby Moor (C.). Known to be a frequent plant of the scars throughout the greater portion of Upper Teesdale, yet of rare occurrence in Cleveland. I have gathered it in the latter district in only one locality, as noted above.

Dichodontium pellucidum L. var. **fagimontanum** Brid. On sandstone in a small glen above Slape Wath (C.).

Dicranella crispa Hedw. Guisbrough (C.); Roxby (C.), with male inflorescence.

Dicranella Schreberi Hedw. Kisdon Force (S.); Richmond (S.), in fruit; Kilton (C.), in fruit; Easington (C.), in fruit; Roxby (C.), in fruit.

Dicranella Schreberi Hedw. var. **elata** Schpr. Kisdon Force (S.); Kilton (C.); Hagg Beck (C.).

Dicranella varia Hedw. var. **callistoma** Dicks. Gunnerside, Upper Swaledale.

Dicranella rufescens Turn. Guisbrough (C.); Lingdale (C.) Kilton (C.); Roxby (C.); Saltburn (C.).

Dicranella subulata Hedw. Guisbrough Moor (C.).

Dicranum Scottianum Turn. On sandstone rocks, Highcliff, Guisbrough (C.). Although this species is not mentioned in Baker's 'North Yorkshire' it is at least fair to note that there is a record in Baker and Nowell's supplement to Baines's 'Flora of Yorkshire' by the late Mr. W. Mudd, for *Dicranum Scottianum* Turn. at the above locality, and also at Ingleby Greenhow. The plant still grows at the former station, though sparingly, and in company with *Dicranum fuscescens* Turn. I have met with it on the same formation on the moor above Slape Wath (C.).

Dicranum fuscescens Turn. var. **falcifolium** Braithw. With the type on rocks on Easby Moor (C.); Guisbrough Moor (C.); and Roxby (C.).

Campylopus setifolius Wils. Among *Sphagna* on Widdy Bank Fell (D.); new to Province xi of Baker's 'North Yorkshire.'

BRUCHIACEÆ.

Archidium phascoides Brid. Blea Beck (T.), in fruit; by the Tees below Falcon Clints (D.); and in clayey pastures, Saltburn (C.), in fruit.

Pleuridium nitidum Hedw. Lingdale (C.); Roxby (C.); Guisbrough (C.).

Pleuridium alternifolium B. & S. Clayey pastures, Saltburn (C.).

SELIGERIACEÆ.

Seligeria Doniana Sm. Maize Beck (T., Westmorland side); Kisdon Force (S.); Hudswell (S.); Richmond (S.).

Seligeria pusilla Hedw. Kisdon Force (S.); Gunnerside (S.); Hudswell (S.); Richmond (S.).

*__Seligeria acutifolia__ var. __longiseta__ Lindb. Kisdon Force (S.); Richmond (S.).

*__Seligeria tristicha__ Brid. Kisdon Force (S.).

Campylostelium saxicola W. & M. Guisbrough (C.); Kilton (C.); Easington (C.).

POTTIACEÆ.

Sphærangium muticum Schreb. Lingdale (C.); Roxby (C.); Saltburn (C.).

Pottia minutula Schwg. On clay ground and in stubble fields, Saltburn (C.).

Pottia intermedia Turn. On earth on tree-stumps near Pierce Bridge (D.). New to Durham County.

Pottia Heimii Hedw. Inland on walls at Winston (D.); and Darlington (D.).

Pottia lanceolata Dicks. Darlington (D.); Saltburn (C.); and Skinningrove (C.).

Didymodon luridus Hornsch. Widdy Bank Fell (D.); Gainford (T.); Ovington (T.), in fruit; Richmond (S.), in fruit; Upleatham (C.); Saltburn (C.); Slape Wath (C.).

Didymodon flexifolius Dicks. Easby Moor (C.), in fruit; Guisbrough (C.).

Didymodon cylindricus Bruch. High Force (D.); Blea Beck (T.); Falcon Clints (T.); Kisdon Force (S.); Kilton (C.); Roxby (C.), in fruit; Crunkley Gill (C.).

Didymodon cylindricus var. **Holtii** Braithw. Widdy Bank Fell (D.).

Didymodon sinuosus Wils. Somewhat frequent on damp rocks and stones and tree-roots (mostly by the river banks) in the limestone districts, and occasionally in similar situations by the streams in Cleveland. In Teesdale, by the side of Unthank Beck; and by the river-side at Ovington, Winston, and Croft. In Swaledale, at Kisdon Force, Hudswell, Whitcliff Woods, and Sandbeck, Richmond. In Cleveland, at Easington and Saltburn.

Eucladium verticillatum L. Gainford (T.), in fruit; Kilton (C.), in fruit; Roxby (C.), in fruit; Saltburn (C.), in fruit.

Ditrichum flexicaule Schwg. In two localities on the sea banks near Saltburn. Very uncommon in Cleveland, and apparently almost confined to the calcareous tracts. For some very characteristic remarks relative to the distribution of this species see Baker's 'North Yorkshire,' p. 322 (1863).

Ditrichum flexicaule var. **densum** Schpr. Widdy Bank Fell (D.).

Trichostomum tophaceum Brid. var. **acutifolium** Schpr. On moist sandstone rocks, Saltburn (C.); Lounsdale (C.). At Gainford I have gathered a form which Dr. Braithwaite considers may probably be the *Trichostomum linoides* Eng. Bot.

Trichostomum mutabile Bruch. Maize-beck Scars (T.).

Trichostomum crispulum Bruch. Cronkley Scar (T.); White Force (T.); Ovington (T.); Kisdon Scar (S.); East Stonesdale (S.); Kilton (C.); Easington (C.); Saltburn (C.)

*****Trichostomum nitidum** Lindb. In Swaledale, on limestone walls at Keld, Hudswell Moor, and Richmond.

*****Trichostomum littorale** Mitt. In the Tees district on Cronkley Scar; and by the side of the river at Ovington. In Cleveland, on rocks by the streams of Easington, Kilton, and Roxby.

Barbula aloides Koch. On clay banks, Mowden Lane, Darlington (D.); Kilton (C.); Liverton (C.); Saltburn (C.); Skelton (C.); Skinningrove (C.); Upleatham (C.).

Barbula marginata B. & S. On sandstone walls at Guisbrough (C.); Slape Wath (C.); Skelton (C.); and Upleatham (C.).

***Barbula recurvifolia** Schpr. In Teesdale, on the summit of Green Fell; and in Swaledale on an old limestone wall at Kisdon Force.

Barbula rigidula (Hedw.) Mitt. Winston Bridge (T.); Ovington (T.); Richmond (S.); Gunnerside (S.); Brompton-on-Swale; Kilton (C.); Roxby (C.); Saltburn (C.).

Barbula spadicea Mitt. Gainford (T.); near Abbey Bridge, Rokeby (T.). In Cleveland not unfrequent on sandy rocks by the side of streams, viz. at Easington, Kilton, Roxby, Saltburn, and Skelton.

Barbula cylindrica Tayl. Winston Bridge (D.); Saltburn (C.).

Barbula revoluta Schwg. On limestone walls, Richmond (S.); and near Limekiln Wood, Catterick (S.).

Barbula tortuosa L. In fruit at Kisdon Scars (S.).

Barbula angustata Wils. Occasionally on hedge-banks near Darlington and Richmond. As frequent in this part of the Cleveland district as its usually much commoner congener *Barbula subulata* L. I have gathered it in the three districts at the following localities, viz.: Baydales and Mowden Lane near Darlington (D.); Pierce Bridge (D.); Hudswell (S.); Richmond (S.); Kilton (C.); Guisbrough (C.); Grinkle Park (C.); Saltburn (C.); Slape Wath (C.).

Barbula latifolia B. & S. On tree trunk by stream side, Saltburn (C.), and also by the Tees at Stapleton, and the Skerne at Blackwell Mill, Darlington (D.).

****Barbula ruralis** L. var. **arenicola** Braithw. On sandy banks near Saltburn (C.).

Barbula intermedia Brid. Winston Bridge (D.); Hudswell (S.); Richmond Moor (S.); Keld (S.); Saltburn (C.).

Barbula papillosa Wils. Wycliffe (T.); Dinsdale Woods (D.); Winston (D.); Brompton-on-Swale (S.); Marske (C.); Saltburn (C.); Upleatham (C.).

Distichium capillaceum L. Descending with the Tees as far as Wycliffe and Gainford.

CALYMPERACEÆ.

****Encalypta vulgaris** Hedw. var. **pilifera** Funck. On dry limestone rocks, Kisdon Scar (S.).

GRIMMIACEÆ.

Rhacomitrium ellipticum Turn. On the summit of Green Fell, Upper Teesdale.

Ptychomitrium polyphyllum Dicks. Holwick Wood (T.); On wall near Eglestone Abbey (T.); Roxby (C.); Skelton (C.); Slape Wath (C.).

Amphoridium Mougeotii B. & S. On moist rocks above Slape Wath (C.). This, like other species referred to, grows somewhat plentifully on most of the scars of the Western dales, but in Cleveland, and especially in this portion of it, it appears with a marked uncommonness. In Swaledale, descending to Richmond.

Zygodon viridissimus Dicks. Fruiting on elm on the south side of the Tees near Gainford.

*Zygodon viridissimus var. **rupestris** Lindb. In Swaledale on limestone rocks, Kisdon Scars, East Stonesdale, and Richmond.

*Zygodon Stirtoni Schpr. On rocks by the Tees near Ovington. In Swaledale at Kisdon Scars and Richmond, in fruit. In Cleveland at Kilton and Saltburn.

Ulota crispula Bruch. High Force (D.); Richmond (S.); Kilton (C.); Roxby (C.).

Ulota phyllantha Brid. On trees, mostly ash, at Brotton (C.); Saltburn (C.); Slape Wath (C.); Upleatham (C.).

Orthotrichum cupulatum Hoffm. var. **nudum** Dicks. By stream-side near St. Lawrence's Ruins, Gainford (T.).

Orthotrichum fastigiatum Bruch. On ash trees at Gainford (D.), and Richmond (S.).

Orthotrichum stramineum Hornsch. Mostly on ash and elm-trees, sometimes on rocks. Holwick (T.); Winch Bridge (D.); Gainford (D.); Richmond (S.); Catterick (S.); Kilton (C.); Roxby (C.); Saltburn (C.); Skelton (C.).

Orthotrichum tenellum Bruch. On trees in hedge-rows. Richmond (S.); Slape Wath (C.).

Orthotrichum pallens Bruch. In hedge-row near Darlington (D.). New to South Durham.

Orthotrichum pulchellum Sm. On willow and elder in hedge-rows, Loftus (C.); and on trees at Roxby (C.).

Orthotrichum Lyellii H. & T. In fruit, on trees near Muker, Upper Swaledale.

Orthotrichum Sprucei Mont. On trees, mostly willow, by the side of Skeeby Beck near Brompton-on-Swale.

Orthotrichum rivulare Turn. In Cleveland, on stones in the streams of Guisbrough, Kilton, Roxby, and Saltburn. In the Swale district, by Skeeby Beck near Brompton-on-Swale.

BARTRAMIACEÆ.

Amblyodon dealbatus Dicks. Widdy Bank Fell (D.).

Bartramia ithyphylla Brid. Somewhat rare in Cleveland. On sandstone rock, Stanghow, and on shale near Guisbrough, but sparingly. On scars opposite the smelting mill, Keld, Upper Swaledale.

BRYACEÆ.

Webera elongata Dicks. In cleft of rock by Maize Beck near Caldron Snout (T.).

Webera cruda Schreb. In the Tees district, descending to Gainford on the Yorkshire side of the river, and in the Swale district to Richmond.

Zieria julacea Schpr. Kisdon Scars (S.).

Bryum uliginosum Bruch. By the side of the Tees, south of Gainford. On the sea-banks, Saltburn (C.).

Bryum alpinum L. var. **meridionale** Schpr. Kisdon Force (S.). Previously gathered at the Peak Cliff, Robin Hood's Bay, by Mr. M. B. Slater, F.L.S., and recorded by him as a plant new to North Yorkshire in 'Naturalist,' Nov. 1889, p. 322.

Bryum concinnatum Spruce. Kisdon Force (S.).

MNIACEÆ.

Cinclidium stygium Swartz. Widdy Bank Fell, August 1880, in fruit.

Bryologists who have been so fortunate as to meet with this rare and interesting moss in a fruiting condition, will doubtless have noticed the peculiar bloom on the capsules when fully mature, reminding one rather of *Webera albicans* Wahl., when in the same condition.

Mnium cuspidatum Hedw. Winston Bridge (T.).

Mnium stellare Hedw. Winch Bridge (D.); Winston Bridge (D.); Richmond (S.); Easington (C.); Kilton (C.); Saltburn (C.).

Mnium subglobosum B. & S. Holwick Fell (T.); Green Fell (T.).

TETRAPHIDACEÆ.

Tetraphis pellucida L. On decaying tree-stumps near Guisbrough (C.); fruiting, but sparingly.

POLYTRICHACEÆ.

Atrichum undulatum L. var. **minor** Hedw. On bare ground, Holwick Fell (T.).

Pogonatum alpinum L. Highcliff, Guisbrough (C.).

AMPHOCARPI.

FISSIDENTACEÆ.

In this group I have considered it better, for the purpose of clearness, to insert the synonyms of the Br. Moss-Flora.

Fissidens exilis Hedw. On shady clay-banks, Darlington (D.); Richmond (S.); Easington (C.); Kilton (C.); Roxby (C.); Saltburn (C.).

Fissidens incurvus W. & M. (*Fissidens incurvus* Starke, Brit. Moss-Flora). On clay banks, sometimes in company with the preceding. Richmond (S.); Easington (C.); Saltburn (C.).

****Fissidens incurvus** W. & M. var. **Lylei** (*Fissidens exiguus* Sull., Brit. Moss-Flora). Shady clay banks, Saltburn (C.).

Fissidens viridulus Wils. (*Fissidens viridulus* (Swartz.) Wahl., Br. Moss-Flora). On sandstone rocks at Guisbrough (C.); and Kilton (C.); and on shady clay banks, Saltburn (C.).

Fissidens tamarindifolius Brid. (*Fissidens incurvus* Starke var. *tamarindifolius* (Don.), Br. Moss-Flora). Shady banks at Guisbrough (C.); Kilton (C.); and in clay pasture, Saltburn (C.).

Fissidens pusillus Wils. var. **madidus** Spruce (*Fissidens minutulus* Sull., Br. Moss-Flora). Hudswell (S.); Richmond (S.).

Fissidens crassipes Wils. (*Fissidens fontanus* Schimp., Br. Moss-Flora). High Force (T.); Ovington (T.); Winston Bridge (D.); Gainford (T.); Skeeby Beck near Brompton-on-Swale; Kilton (C.); Liverton (C.); Roxby (C.); Easington (C.).

Fissidens decipiens DeNot. (*Fissidens cristatus* Wils., Br. Moss-Flora). Not unfrequent in Teesdale and Swaledale, and occasionally in Cleveland, occurring in the several districts at the following localities:—White Force (T.); Blea Beck (T.); High Force (T.); Winston Bridge (T.); Richmond (S.); Gunnerside (S.); Kisdon Force (S.); Easington (C.); Kilton (C.); Roxby (C.).

SCHISTOSTEGACEÆ.

Schistostega osmundacea Dicks. Near Guisbrough (C.).

CLADOCARPI.

RIPARIACEÆ.

Cinclidotus fontinaloides Hedw. There is reason to believe that this species and *Anœctangium compactum* Schl. (recorded by Mr. W. Mudd at the Hell Gill station, Guisbrough Moor,) have, like *Gymnostomum rupestre* Schwg., and by the same means already referred to, become extinct.

PLEUROCARPI.

LEUCODONTACEÆ.

Antitrichia curtipendula L. On wall at Angram, Upper Swaledale, in fruit.

NECKERACEÆ.

Neckera pumila Hedw. On tree near Kisdon Force, Upper Swaledale.

Neckera crispa L. On shady rocks by Easington Beck (C.), and near Saltburn (C.), sparingly. Rare in Cleveland, but, like *Ditrichum flexicaule* Schwg., it usually abounds where the limestone occurs.

LESKEACEÆ.

Anomodon longifolius Schleich. On the Durham side of the Tees at Winston Bridge, and in Swaledale at Keld and Richmond. New to Province xi of Baker's 'North Yorkshire.'

HYPNACEÆ.

Climacium dendroides L. On Guisbrough Moor (C.), in fine fruit.

Pylaisia polyantha Schreb. Not rare in the Tees district about Darlington, where it was discovered as a British plant by Mr. W. Backhouse (see Hooker's Brit. Flora, ii, p. 82, 1833). It grows (chiefly on old hawthorn) at the following additional localities in that part, viz. Gainford, Coniscliffe, Mowden Lane, Walworth, and also on stones at the last-named station. Recorded in Winch's Flora of Northumb. and Durham, as occurring near Croft, by Rev. J. Dalton. I have noted it once only in Cleveland. On old stumps in a hedge-row near Grinkle Park, Loftus.

Orthothecium intricatum Hartm. In the Swale district, descending to Richmond.

Brachythecium glareosum B. & S. Kilton (C.), in fruit; Roxby (C.), in fruit.

Eurhynchium crassinervium Tayl. Ovington (T.), in fruit; Winston (D.), in fruit; Keld (S.), in fruit.

Eurhynchium piliferum Schreb. Kilton (C.), in fruit; Roxby (C.), in fruit.

Eurhynchium pumilum Wils. Winston Bridge (T.); Gainford (T.); Easington (C.); Kilton (C.), in fruit; Liverton (C.); Saltburn (C.), in fruit; Skinningrove (C.), in fruit.

Eurhynchium Teesdalii Sm. High Force (T.); Ovington (T.); Gainford (T.); Kisdon Force (S.); Richmond (S.); Easington (C.); Kilton (C.); Liverton (C.); Roxby (C.); Saltburn (C.).

Hyocomium flagellare Dicks. By stream above Guisbrough (C.); Slape Wath (C.).

Rhynchostegium tenellum Dicks. On shady limestone rocks by the Tees at Ovington and Winston Bridge; and in the Swale district, at Limekiln Wood, Catterick.

Rhynchostegium depressum Bruch. Winston Bridge (D.), in fruit; Richmond (S.); Crunkley Gill (C.), in fruit; Easington (C.); Kilton (C.), in fruit; Roxby (C.); Saltburn (C.); and Gainford (T.).

Plagiothecium pulchellum Hedw. By the Tees, descending to Whorlton Bridge.

Amblystegium Sprucei Bruch. In the Tees district, by the Westmorland side of Maize Beck, Langdon Beck, Ovington, and Gainford; and in Swaledale, at Kisdon Force, Gunnerside, and Richmond.

Amblystegium irriguum Wils. On stones in Easington Beck (C.), in fruit; Roxby Beck (C.), in fruit.

Amblystegium fluviatile Swartz. On rocks and stones in the Tees at Winston Bridge, in fruit.

Hypnum incurvatum Brid. On shaded limestone rocks near Richmond (S.). Not previously recorded for the Swale district.

Hypnum polymorphum Hedw. Winston Bridge (T.); Kisdon Force (S.); Hudswell (S.); Richmond (S.); Catterick (S.).

Hypnum stellatum Schreb. var. **protensum** Brid. Falcon Clints (D.); Kisdon Force (S.); Limekiln Wood, Catterick (S.).

Hypnum Schreberi Ehrh. Widdy Bank Fell (D.), in fruit.

Hypnum purum L. Roxby (C.), in fruit; Saltburn (C.), in fruit.

Hypnum stramineum Dicks. On Green Fell, Teesdale; by the side of the Swale above Keld; at Lockwood Beck (C.); near Gormire, Thirsk.

Hylocomium brevirostrum Ehrh. Kisdon Force, Upper Swaledale.

THE YORKSHIRE NATURALISTS' UNION AT BRETTON PARK.

About sixty members of the Yorkshire Naturalists' Union spent a pleasant afternoon on Saturday, June the 14th, in the district chosen for the 85th meeting, which was held at Dewsbury for the investigation of Bretton Park, Coxley Valley, and Elmley Woodhouse, a charming district, the first-named place being the Yorkshire seat of Mr. Wentworth Blackett Beaumont, M.P., to whom the Union is much indebted for so very kindly throwing open his estate.

For the benefit of everyone, as far as possible, two separate excursions had been arranged, the first to start from Horbury Bridge Station at 11.0 a.m. and to proceed to Bretton Park village by way of Calder Bank, Hartley Bank Colliery and Bullcliffe Wood, returning by Stocks Moor and Midgley. Horbury Bridge Station was also the starting point for the second party, who were to leave there at 1 o'clock by way of Coxley Valley, Stone Cliffe Wood to Elmley Woodhouse and Bentley Springs, returning to Midgley.

This is what had been arranged by Messrs. C. P. Hobkirk, F.L.S., and P. F. Lee, to whom the Hon. Secretaries are much indebted for making the arrangements and drawing up the usual excursion circular, but in point of fact although two parties started as arranged it would be somewhat difficult to say what actually took place; for example several members were on the ground in the early morning so as to have a full day in the district, and many of the others took to independent research, rambling where they listed. However, as the day wore on and especially towards five o'clock, members came dropping into Dewsbury by ones and twos and made their way to the Royal Hotel. It will scarcely be necessary to mention that five o'clock was the time fixed for tea, and tea-time always proving an attraction, those who are experienced in these matters find that the census of the attendant members can only be safely taken at that time. The weather throughout the day was beautifully fine, and it is not too much to say that the members attending the excursion thoroughly enjoyed themselves in this lovely district. After tea, the sections met to compare notes prior to the General Meeting which was held at 6.30, and presided over by Mr. C. P. Hobkirk, F.L.S. It was found that many members would have to leave soon in order to catch their respective homeward bound trains, in consequence of which, on the suggestion of the chairman, the minutes of the previous meeting were taken as read.

Mr. Arthur Ed. Holme, M.A., Dewsbury; the Rev. F. Barham Foster, B.A., Heckmondwike, and Mr. E. W. Last, Huddersfield, were

elected members of the Union, and members were present from the following eighteen societies :—Heckmondwike, Wakefield, Ovenden, Elland, Liversedge, Leeds (two societies), Bradford, Goole, Conchological Society, Dewsbury, Malton, Hull, Doncaster, Harrogate (two societies), Huddersfield, and Halifax.

A hearty vote of thanks, on the motion of the Rev. W. Fowler, M.A., seconded by Mr. Jas. W. Davis, F.G.S., was accorded to Mr. W. B. Beaumont, M.P., for his kindness in allowing the members to visit Bretton Park ; also to Messrs. P. F. Lee and W. Rushforth for conducting the several parties, and to the various contributors to the excursion circular.

The Reports of the Sections were next presented as follows :—

The Vertebrate Section was officially represented on the ground by its President, Mr. Thos. Bunker, Goole, and one of its secretaries, Mr. Edgar R. Waite, F.L.S., Leeds, although neither gentleman knew of the presence of the other until tea-time, when the excursion was over. The report was presented to the General Meeting by Mr. Bunker, and Mr. Waite has supplied the following notes on the excursion :—In consequence of two parties having started from Horbury at an interval of two hours, and owing to the large tract of country which was at their disposition, the numerical strength of the Section was not known until the Sectional meeting, when it was found to have comprised about nine or ten members, who roamed the district solitarily or at most in groups of twos or threes. Some investigated the fine wood lying between Horbury and Midgley, others worked up the stream-side, while one or two spent nearly the whole of their time in Bretton Park. Here a small herd of Fallow Deer are kept, and Mr. H. B. Booth saw a fine flock of Canada Geese on the lake. In Bullcliffe Wood nests of the Song Thrush, Blackbird, Whitethroat, and Hedge Accentor were found, as were also those of the House Martin and Yellow Bunting near Midgley, all containing eggs. The following Mammals were noted on the excursion :—Mole, Common Shrew, Fallow Deer, Water Vole, Common Field Vole, and Rabbit. Forty-three species of Birds were observed, of which 26 are residents and 17 migrants. Eggs of seven and young of three species were also recorded. The following is a complete list of the Birds, the eggs being marked with asterisks (*) and young with daggers (†) :—

Missel Thrush.
*† Song Thrush.
*† Blackbird.
Whinchat.
Redstart.
Redbreast.
* Whitethroat.
* Garden Warbler.
Chiffchaff.
Willow Warbler.
Sedge Warbler.
* Hedge Accentor.
Great Tit.
Blue Tit.

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Skylark.
Swift.
Cuckoo.
Kestrel.
Ring Dove.
Pheasant.
Landrail.
† Waterhen.
Coot.
Lapwing.
Sandpiper.

The Smooth Newt and Common Frog represented the Amphibians; and th eRoach, Minnow, and Trout were the only fish seen during the day.

For the Conchological Section, of which one of the Secretaries, Mr. John Emmet, F.L.S., of Boston Spa, was present, the report was given by Mr. W. Denison Roebuck, F.L.S., who stated that the conchologists present during the day (amongst whom may be particularly mentioned Mr. W. Nelson, of Leeds, who in company with Mr. Roebuck investigated the neighbourhood of Bullcliffe Wood and a pond near Crigglestone Station, and Mr. J. E. Crowther, of Elland, who had collected in Coxley Valley) had toiled all day for but slender results, the unfavourable character of the geological formation combining with the dryness of the weather and the parched nature of the soil to militate against success. Seventeen species in all had been found, of which four were slugs and three were freshwater shells. The specimens of *Planorbis albus* found in the pond near Crigglestone showed a tendency to distortion and a turning down of the mouth. The other water-shells were a *Pisidium*, and, of course, *Limnæa peregra*. The slugs were *Limax agrestis*, *Arion ater*, *A. hortensis*, and *A. bourguignati*. Of land-shells *Azeca tridens* and *Zonites excavatus* were found by Mr. Crowther in Coxley Valley, along with *Succinea putris*, *Z. cellarius*, *Z. fulvus*, *Helix nemoralis*, *H. rufescens*, and *Clausilia rugosa*, while *H. rotundata*, and *Z. alliarius* were found in Bullcliffe Wood.

The Entomological Section was not officially represented at the meeting, but Mr. S. L. Mosley, F.E.S., of Huddersfield, who attended the excursion, writes that but little work was done, the members having to hurry too much. In Bretton Park, *Eupithecia pygmæata* and *Melanippe hastata* were taken, and the trees in Stonecliffe Wood were defoliated by the Winter Moth (*Hybernia defoliaria*). Here the larvæ of *Pœcilocampa populi* were found, and galls of *Andricus terminalis* were common and large; galls of *A. radicis*

were also found. The best beetle taken was *Donacia bidens*. Mr. W. Denison Roebuck, F.L.S., took *Cychrus rostratus* at Bullcliffe Wood. Mr. Edgar R. Waite, F.L.S., noticed the almost entire defoliation of hazel trees in Bullcliffe Wood by various species of geometer larvæ, and remarked that it was a question upon which there was some speculation as to how the hungry caterpillars would procure sufficient food to maintain themselves until they are full grown. He also recorded the great abundance of *Abraxas ulmata* on the wing in Bullcliffe Wood.

For the Botanical Section, Mr. P. F. Lee, Phanerogamic Secretary, stated that the day had been very successful and that most of the plants put down in the circular with several other uncommon ones, had been observed—one at least of these, a sedge (which was left for after determination), being an addition to the flora of the Dewsbury district, while another sedge, almost sure to turn out as *Carex fulva* Good. (being yet too young for safe determination) will be in that event also an addition to the local flora. Out of a total of nearly 600 species, sub-species, and varieties known in the district, about 185 in flower or fruit had been noted during the day in Coxley Valley and Wood, at Stocks Moor, Elmley Woodhouse, and Bretton Park. *Barbarea stricta* Andrz., the uncommon sub.-sp. of *B. vulgaris*, was gathered, but hardly as typical as noticed in former years. Among the best plants observed were :—*Nasturtium palustre* DC., *Viola odorata* L., *Polygala vulgaris* sub.-sp. *P. depressa* Wend., *Saponaria officinalis* L., *Vicia angustifolia* var. *V. Bobartii* Forst., *Hydrocotyle vulgaris* L., *Myrrhis odorata* Scop., *Œnanthe crocata* L., *Adoxa Moschatellina* L., *Campanula latifolia* L., *Primula vulgaris* Huds., *Hottonia palustris* L., *Myosotis versicolor* Reichb., *Lamium album* L., *Veronica arvensis* L., *Plantago media* L., *Salix pentandra* L. (very fragrant and with fine male catkins), *Listera ovata* Br., *Scirpus sylvaticus* L., and *Acorus Calamus* L. The best work was done among the Sedges, the following being found :—*Carex muricata*, *C. remota*, *C. glauca*, *C. panicea*, *C. sylvatica*, and *C. hirta* (in a new locality : Elmley Woodhouse), besides the sedge already cited as likely to be *C. fulva*, and the one unnamed (since examined by Mr. Arthur Bennett, of Croydon, and named by him as *Carex chrysites* Link. = *C. Œderi* Auct. Angl. (non Ehrh.) and *C. flava* L. var. *cyperoides* Marsson)—added to the local flora as a result of the Union's visit. In ferns, *Nephrodium spinulosum* Desv. was seen in its old habitat, in Coxley Wood.

Mr. J. W. Davis, F.L.S., F.G.S., reported that the geologists had had a very uneventful day, so far as their science was concerned. Beyond a few exposures, showing current-bedded sandstones and

the indications given by a few pit-shafts, there was little ocular demonstration of the Middle Coal Measures, over which their route lay. For the convenience of all two excursions were arranged. The first left at 11.0 a.m., and had the advantage of the presence of Mr. Spencer, of Halifax, whilst Mr. J. W. Davis, F.L.S., F.G.S., of Halifax, accompanied the second party, which left at 1 p.m. The chief geological feature of the district is the Woolley Edge Rock, with its fine escarpment, but time did not allow them to examine it. The thinner sandstones, which alternate with shale and coal seams over this area, form gentle slopes covered with fertile soil and are well wooded. As might be expected, therefore, there were few exposures, and the pit banks seen were either newly covered with ashes, or did not exhibit anything worth noting. Accordingly hammers rested quietly in their bags, and the party enjoyed the rustic beauty of Coxley Valley and Stonecliffe Wood, and the broad, undulating scenery of Bretton Park, undisturbed by the temptation to 'grub' for fossils. A short account of the geology of the district was then given by Mr. Davis. The geological features, were, for the most part, hidden by the surface soil, and the only way in which one could ascertain the geological structure was by an examination of the sections obtained in sinking coal-pits. Nevertheless, the district was extremely interesting. To the west of Bretton Park the Lower Coal Measures were characterised by thick beds of sandstone and grit, with intermediate shales and thin coal. The strata in the Bretton Park district were the Middle Coal Measures. The thick grit and sandstone which characterise the lower measures westward had disappeared, their places being taken by thinner beds of sandstone somewhat finer in structure. These beds were rather numerous. The modified escarpments formed by the out-crop of the sandstones, alternating with shale and coal seams, gave the country a very beautiful appearance. The most prominent feature of the neighbourhood was due to the Woolley Edge Rock, on the far side of Bretton Park. The grit which formed the moorland near Midgley was not of sufficient prominence to form an escarpment, but caused the ground to be undulating.

On the motion of Mr. Thomas Birks (now of Liverpool, and an old member of the Union), seconded by Mr. J. M. Kirk, a cordial vote of thanks was passed to Mr. Hobkirk for presiding.

Mr. J. W. Davis took the opportunity of referring to the fund of £250 which it had been decided to raise on behalf of the widow of their late friend Mr. S. A. Adamson, and mentioned that the fund had not yet reached £150. He was sure that if the members of the Y.N.U. and of the affiliated Societies would only make up their minds to raise the sum the task would be a comparatively easy one.—E.R.W.

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WALKS ABOUT BRADFORD.

One Hundred and Eighty Pleasant Walks around Bradford; including a Notice of the Town and its Public Buildings; also a short Sketch and History of Forty-six Villages, and Complete Guide to the District Six to Ten Miles around Bradford. By JOHNNIE GRAY . . . Illustrated. . . . Bradford: T. BREAR & Co. . . 1890. [8vo, cloth, pp. xx + 188].

Under the above title we have before us an admirably-arranged and concisely-written handbook for pedestrians using Bradford as a starting-point, and one which will create an interest in many objects which would otherwise be passed over unnoticed. Natural history—though by no means a main object—is well attended to, and not only are there given here and there interesting references to birds or plants found in certain localities, but there is a short chapter on geology, and another on botany is useful as giving localities for a number of plants belonging to the well-worked (and therefore rich) Bradford flora; while the chapter on Folk-lore which follows is also of interest to naturalists. The alphabetical arrangement of the localities treated of, the clearness and intelligibility of the typographical arrangement, and the absence of verbiage, are all points in recommendation of this little work, which we must not fail to note is copiously illustrated with wood blocks.

NOTES—MAMMALIA.

Whale at the Tees Mouth.—Hearing from one of the Redcar pilots that a Whale had been captured at the Tees mouth yesterday, I went up to the Breakwater this morning to see if it was still there, and learnt the following particulars from a salmon-fisherman who had assisted at the capture. It appears that about high-tide a large Whale was noticed in the little boat harbour near the Tees Defence Works on the South Gare, and some fishermen, who had been engaged with their salmon-nets at the mouth of the river, succeeded in fixing a pair of graplings in the blowhole, and then hauled it to the side, and made it fast by a rope to a post on the bank; but, thinking it was of no value to them, after about half an hour they let it go again. Its head was lying on a sloping boat gangway, and, as the tide was ebbing, it would soon have been high and dry. However, it managed to struggle into deep water, and for two hours afterwards was swimming about the harbour trying to find a way out, which it eventually managed to do, and made off down the river. My informant said it was bleeding from the graplings' wounds in the blowhole, and also in other parts which had come into contact with the slag on the river's bank. He described it as being about twenty feet in length; its head flat, like an elephant's, with a nose eighteen inches or two feet long and as thick as a man's thigh; the colour was dark on the back and light underneath.

Is there any record of two Whales which were brought ashore here some twenty years ago? One was 26 ft. in length; the other, presumably a young one, was much smaller.—T. H. NELSON, Redcar, 10th July, 1890.

[There is little doubt from the above slight description that the Whale was of the Common Beaked species (*Hyperoödon rostratus* Müller).—W.E.C.]

Squirrels and Fungi.—Is it a known fact that squirrels eat fungi? I was watching a Squirrel (*Sciurus vulgaris*) eating a flat white thing like a biscuit, which it held in its paws and nibbled. On my approaching nearer it let fall the substance, which proved to be a fungus, the stalk of which was at the foot of the tree, pulled up and nibbled.—A. G. JARVIS, Woodhall Spa, July 12th, 1890.

CONCHOLOGICAL FIELD-NOTES FROM UPPER SWALEDALE, N.W. YORKSHIRE.

W. DENISON ROEBUCK, F.L.S.,
Leeds; Hon. Secretary and Recorder to the Conchological Society.

As there do not appear to be any published records of the mollusca of Upper Swaledale, a record of what was obtained during a few days spent in the dale at the end of July 1884, with Gunnerside as headquarters, and a few days in mid-August 1885, with headquarters at the Strands farm-house, a mile lower down the valley, will be of interest. On both these occasions the writer was accompanied by his friend Mr. T. K. Skipwith, to whom, in addition to the pleasure afforded by his companionship, is due considerable assistance in the search for shells. From these two points, as headquarters, the dale was explored upwards by Ivelet, Satron, Muker, Thwaite, and Angram to Keld and Kisdon Force, eight miles, and downwards past Isles Bridge, Low Row, Feetham, Low Whita Bridge, Healaugh, and Reeth to Fremington and Grinton, six miles. One day's expedition was directed up Arkengarthdale, returning across the moors to the Strands, and other places were visited. But molluscs were not the exclusive object of attention, for walks were taken by both members of the expedition in which conchology had to occupy a very insignificant position, and one of us found the excellent trout-fishing which Swale affords very much to his taste, and highly conducive to his enjoyment. The district being a high-lying and submontane one, and the Swale and its principal tributaries swift and turbulent streams, the list includes but two aquatic shells, the ubiquitous *Limnæa peregra* (strange to say) not being one of them. The slugs number seven and the land shells twenty-six, total thirty-five. The most noticeable deficiencies in the list are *Limax maximus* (which I am pretty sure I have taken, although I can find no mention of it in my records), *Succinea putris* and *S. elegans*, and *Helix concinna*. There are others which may be expected with more or less confidence to turn up. For instance, Kisdon Woods have scarcely been explored at all, and should be carefully investigated in the hope of discovering such species as *Helix fusca*, *H. aculeata*, *H. pygmæa*, *Vertigo edentula*, while even *Pupa ringens*, *Helix lamellata*, and *Clausilia laminata* might possibly be found to occur there. The roadsides and walls and hedge-rows were found to be very prolific hunting-grounds, and the lines of scars along the hill-sides offer attractions to various species of calcareous inclination.

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Arion ater. An abundant species, which ranges further into the moorlands than any other. Very numerous on the moorlands near the Tanhill Colliery, at an elevation of about 1,500 feet, and found plentifully by roadsides at Low Lane near Isles Bridge, Feetham, Gunnerside, etc., and in Arkengarthdale near Wood House.

The var. *succinea* occurred by roadsides at Angram, near Satron, and in Arkengarthdale near Storthwaite; the var. *nigrescens* by roadsides near Ivelet Bridge, near Gunnerside, and near Isles Bridge; the var. *plumbea* at Angram; and the var. *brunnea* at Grinton.

Arion subfuscus. One near Isles Bridge.

Arion hortensis. Not uncommon by roadsides near Angram, Satron, Gunnerside, and in Gunnerside Gill.

Arion bourguignati. Common by roadsides and in fields; near Swale Bridge at Gunnerside, at Feetham, Low Row, and doubtless everywhere in the low country.

Limax agrestis. Very common about Satron, Gunnerside Gill, Gunnerside, Strands, Isles Bridge, Low Lane, Feetham, Low Row, and in Arkengarthdale at Storthwaite.

The var. *sylvatica* Moq. is common about Gunnerside and elsewhere.

Limax lævis. Has been found in Gunnerside Gill and by sides of roads near Gunnerside.

Limax arborum. Not uncommon; near Thwaite, Ivelet Bridge, Gunnerside Gill, and by roadsides near Satron.

Vitrina pellucida. Found singly on roadsides near Satron, Strands, Low Row, Wood End near Feetham, and near Low Whita Bridge.

Zonites cellarius. Common; at Kisdon Force Woods, Angram, Thwaite, Scar House near Thwaite, Gunnerside Scars, Gill, and village, Strands, and Wood End near Feetham.

Zonites alliarius. Common by roadsides near Satron; also found at Gunnerside Scars and village, Barf Scars above Strands, Wood End near Feetham, Healaugh, and in Arkengarthdale near Wood House.

Zonites glaber. One found in Low Lane near Isles Bridge.

Zonites nitidulus. A common species; Keld, Kisdon Force Woods, Scar House near Thwaite, Satron, Gunnerside village and Gill, near Ivelet Bridge, Strands, Barf Scars above Strands, Low Lane near Isles Bridge, Wood End near Feetham, roadsides at Healaugh, and in Arkengarthdale near Wood House.

Zonites purus. By roadsides, occasional; at Gunnerside, Strands, Barf Scars above Strands, Wood End near Feetham, Low Lane near Isles Bridge, and Grinton.

Zonites radiatulus. Has occurred to me sparingly at Angram, about the Strands, and in Low Lane near Isles Bridge.

Zonites crystallinus. Not uncommon; Woods near Kisdon Force, Scar House near Thwaite, roadsides near Satron, Gunnerside Gill and village, near Ivelet Bridge, Strands, Low Lane near Isles Bridge, Low Row, Wood End near Feetham, near Grinton, and in Arkengarthdale near Wood House.

Zonites fulvus. Has been found in Kisdon Force Woods and Gunnerside Gill.

Helix nemoralis. A large number of specimens collected for me near Gunnerside by Mr. Leonard Sunter included the following forms: var. *libellula* 12345, 123(45), 02340, 023(45), and *rubella* 12345, 023(45), some being with pale and interrupted bands, others normal. One found by the roadside at Wood End near Feetham, was *rubella* 00000.

Helix hortensis. This appeared to be more widely dispersed than the preceding. The following forms occurred: *lutea* 00000 *roseolabiata* at Gunnerside; *lutea* 00000 not uncommonly at Gunnerside, the Strands, Low Lane near Isles Bridge, and Wood End near Feetham; *lutea* 00345 at the Strands; and *lutea* 12345 at Gunnerside (some with pale bands), Strands, near Isles Bridge, and Wood End near Feetham.

Helix arbustorum. Not uncommon in the woods near Kisdon Force, at Satron, Gunnerside, in Low Lane near Isles Bridge, Wood End near Feetham, and Grinton.

The var. *alpestris* is plentiful on roadsides about Satron, and near Ivelet Bridge; the var. *pallida* occurs on roadsides near Satron, and at Grinton; and the var. *marmorata* has once occurred by the roadside near Satron, with the type.

Helix rufescens. Of this I have found but one example, a young specimen, at Keld.

Helix hispida. A common species; found in the woods near Kisdon Force, at Keld, Angram, Thwaite, Park House near Keld, Scar House near Thwaite, Muker, near Ivelet Bridge, Satron, Gunnerside Scars, Gill and village, Strands, Barf Hill top near the Strands, Low Lane near Isles Bridge, Wood End near Feetham, Low Row, Healaugh, Reeth, and in Arkengarthdale near Wood House.

Helix sericea. A common species in wet places by roadsides, at Keld, Angram, Scar House near Thwaite, Muker, Satron,

Strands, Low Lane near Isles Bridge, and in Arkengarthdale near Wood House.

Helix rotundata. An abundant species throughout the dale; Keld, Park House near Keld, Angram, Muker, woods by Kisdon Force, roadsides at Scar House near Thwaite, Ivelet, Satron, Gunnerside Scars, Gill, and village, Strands, Low Row, Wood End near Feetham, Low Lane near Isles Bridge, Healaugh, Grinton, Reeth, and in Arkengarthdale near Wood House.

Helix rupestris. Abundant on limestone walls and scars; Keld, Park House near Keld, near Ivelet Bridge, roadside walls near Satron, Gunnerside Scars, Barf Hill near Strands, and Low Row.

Helix pulchella. Not uncommon in Gunnerside village, and also found on roadsides at the Strands and at Wood End near Feetham.

Bulimus obscurus. Occasionally found; roadsides near Satron, Gunnerside Scars and Gill, Strands, and top of Barf Hill.

Pupa umbilicata. By no means uncommon at Angram, Muker, Gunnerside Scars, in the village, and by roadsides near Satron; also at Strands, Low Row, and Wood End near Feetham.

Vertigo pygmæa. Not uncommon by roadsides at the Strands, Low Row, and near Low Whita Bridge.

Balea perversa. Plentiful on walls at Satron, near Ivelet Bridge, Gunnerside, the Strands, etc.

Clausilia rugosa. A common species by roadsides at Keld, in Kisdon Force woods, roadsides near Satron, near Ivelet Bridge, Gunnerside Gill, Strands, Low Lane near Isles Bridge, Wood End near Feetham, and Grinton.

The var. *dubia* is numerous on walls at Keld, at Park House near Keld, and by roadsides near Satron.

Azeca tridens. A few are to be found on roadsides, near Satron, and in Gunnerside Gill.

Zua lubrica. A common species by roadsides; Kisdon Force woods, in the Buttertubs Pass, Scar House near Thwaite, near Muker, near Satron and in Gunnerside village, Gunnerside Scars, the Strands, Barf Scars above Strands, Low Row, Wood End near Feetham, Low Lane near Isles Bridge, Healaugh, and in Arkengarthdale at Wood House.

The var. *lubricoides* is not uncommon with the type by roadsides near Satron, in Gunnerside village, and at Wood End near Feetham.

Carychium carychium. Not uncommon by roadsides, at Satron, in Gunnerside village, and at the Strands.

Limnæa truncatula. Plentiful on steep wet banks near Ivelet Bridge, not uncommon in wet places by the roadsides near Satron, the Strands, etc., and very numerous in a horse-trough at Gunnerside.

Ancylus fluviatilis. Plentiful in small rills in Gunnerside village, where it has also been previously found by Mr. Henry Crowther, numerous in streamlets near the Strands, and has also been found in the Arkle Beck at Langthwaite.

The var. *gibbosa* Bgt. has been found at Gunnerside by Mr. Henry Crowther.

Such is my list for the upper part of the Swale valley, which alone I have had the opportunity of searching for more than an hour or so. Further down the dale other observations have been made by myself and friends at odd times, and these it will not be without interest to recapitulate.

For that portion of Swaledale which extends from Reeth down to Richmond I am not aware of any records whatever.

At Richmond Mr. Henry Crowther collected some dozen years ago the following:—

Helix rufescens.	Pupa umbilicata.
Helix hispida.	Clausilia rugosa.
Helix rotundata.	*Limnæa peregra and *var. ovata.
*Helix lapicida.	Limnæa truncatula.

Those marked with the asterisk are forms additional to my list, and increase its numerical total to 37. At Richmond also Mr. Baker Hudson found *Clausilia rugosa* var. *dubia* and *Helix rufescens* with var. *rubens*, all very abundant on walls and among nettles and stones.

At Easby Abbey, on the 1st of August 1881, I found

Helix hispida.	*Helix pygmæa.
Helix rotundata.	Pupa umbilicata.

The one starred brings up the Swaledale list to 38.

The following have been found at Snape by Mr. H. Crowther;

Helix pulchella.	*Limnæa stagnalis.
Clausilia rugosa var. dubia.	L. truncatula.
*Bythinia tentaculata.	Ancylus fluviatilis.
*Valvata piscinalis.	*Sphærium corneum.
Limnæa peregra.	*Pisidium fontinale.

And at Leeming Lane near Bedale, Mr. Crowther has found **Neritina fluviatilis* and *Sphærium corneum.*

These two localities, which bring in six additional species, are, however, low-lying ones belonging to the central plain of Yorkshire, and although undoubtedly within the Swale drainage-area, are not in what may be properly called Swaledale.

August 1890.

NOTES ON BIRDS FROM LANCASHIRE.

Extracted from Letters of the late James Cooper.

Rev. H. A. MACPHERSON, M.A., M.B.O.U., Etc.,
Author of the 'Visitation of Pallas's Sand-Grouse to Scotland,' etc.

The North of England has always been fortunate in possessing a supply of field naturalists drawn from the working classes and pursuing their studies in the face of many difficulties. Of the number, none perhaps should be remembered more worthily than the late James Cooper. Born at Cockermouth in 1792, he long earned his bread as a cotton spinner in the neighbourhood of Carlisle. His natural tastes were furthered and developed by the late Mr. T. C. Heysham, under whose instruction he became a successful collector of birds and lepidoptera. James Cooper contributed a few notes to the 'Zoologist.' Some other results of his experience have been published in Mr. Murray Adamson's valuable work, 'More Scraps about Birds.' The present paper supplies some hitherto *unpublished* information, relating to Lancashire. In 1840 James Cooper left Carlisle for Preston, travelling on foot with his family as far as Lancaster. At Preston he obtained work at his trade, but the intervals of his leisure were given up to collecting. Mr. Heysham, who had always taken a lively interest in Cooper, and once offered to start him in business, which he declined, continued to employ Cooper as a birdstuffer, no doubt from a wish to render him pecuniary support. Consequently, some letters passed between the two, and the following particulars have been extracted from Cooper's letters as not unworthy of preservation.

'Preston, September 27th, 1840.— . . . I have seen few insects or birds; of the latter I had a shot at a Greenshank [*Totanus canescens*], two or three of which I saw about four miles below Preston on the banks of the Ribble. I stuffed a young Pigmy Curlew [*Tringa subarquata*] shot near Lytham. Bar-tailed Godwits [*Limosa lapponica*] and young Ruffs and Reeves [*Machetes pugnax*] are sometimes hanging in the fish-market.'

'Preston, January 30th, 1842.—Of the rarer birds got here the most noted is a specimen of the Hoopoe [*Upupa epops*] and one of the Wood Sandpiper [*Totanus glareola*], a Grey-backed Shrike [*Lanius excubitor*], and a Little Auk [*Mergulus alle*] or two. A specimen or two of the Purple Sandpiper [*Tringa striata*] has occurred. The Grey Plover [*Squatarola helvetica*] I find remains here all the winter. I saw a few the other day, but could not get a shot at them. They are very light-coloured.'

'Preston, September 4th, 1842.—On Tuesday last I killed a young Sanderling [*Calidris arenaria*], and saw about ten young Black Terns [*Hydrochelidon nigra*], but did not get any. Went over the same ground and much more on Friday; saw nothing except two Bar-tailed Godwits. Went out again on Saturday (yesterday) afternoon; saw a Spotted Redshank [*Totanus fuscus*], it came up the river and sat down upon a piece of open sand at the foot of a small brook. When I attempted to approach it, it rose and took quite across the fields, leaving the river altogether, and I saw no more of it.'

'Preston, November 12th, 1842.—I have done nothing myself this autumn. The best bird I killed was a Greenshank [*Totanus canescens*]. I got another from a person one day when I was out shooting in the last week of September; it was a very large specimen, and from the hardness of its bones appeared to be an old bird. . . . In a letter I had from my son-in-law, who is at Newark-on-Trent, he tells me that a Kite [*Milvus ictinus*] was killed close to the town, and a little Bustard [*Otis tetrax*] was killed about two months before, not far from that place.'

'Preston, June 5th, 1843.—I am sorry to say I have not been able to get a single Dotterel [*Eudromias morinellus*] this spring, although I exerted myself to do so, having had an order for several. I saw three, probably the remnant of a flock that had been shot away; they were wild. I had a shot at one, but missed it, and never had another chance. There had been seven in the market, but I did not get any of them. Six were purchased for the table all at once; the odd bird was bought by an angler for its feathers. I was down upon the coast last week, and crossed over to Bardsea from Fleetwood. It came on wet. I went up to Ulverston and stopped several days. It rained all the time, and I could not get out. When I came down on Friday morning to return by the steamer, it was fair, and I strolled down the shore a few miles in the direction of Foulney and Walney, and met a few Terns coming up with the tide; shot two. They were Arctic Terns [*Sterna macrura*], and by the state of the belly were evidently breeding. . . . I have shot nothing this spring worth notice, except a Whimbrel [*Numenius phæopus*], a female continental Wagtail (*Motacilla alba*), and a Black Tern [*Hydrochelidon nigra*]—all good specimens. The Whimbrels were plentiful, but very wild. I wounded two others, but lost them both.'

'Preston, January 28th, 1844.—I have fallen in with the Rock Pipit [*Anthus obscurus*] on the banks of the Ribble this winter, and have killed four, wounded another (which I lost), and saw two or three more. . . . They are very like the Tit-Lark in their habits and

manner of feeding, but were generally single, or at most two together. feeding along ditches that run into the river. They are much more shy than the Tit-Lark. I have looked very little after birds this winter, and nothing has been got here worth notice, except a Fork-tailed Petrel [*Procellaria leucorrhoa*] and a Hoopoe late in autumn.'

These extracts are given verbatim; but the punctuation and spelling have been amended slightly, and the scientific names added within square brackets.

NOTE—BOTANY.

Ophrys apifera Huds. **at Skipton.**—In 'The Naturalist' for January 1887 I reported the rediscovery of the Bee Orchid near Skipton. This year, on June 18th, Mr. Rotheray found about a dozen plants, and on June 24th and July 5th, in the course of two short rambles, we increased the number to upwards of ninety. The unusual prevalence of the plant this season led me to suspect that I had been too hasty in informing Mr. F. A. Lees of its extinction in its previously-recorded Skipton locality—Birtwhistle Rocks; and, having obtained the necessary permission, I made careful search for it there on June 30th, with the result that I found three plants. The record on page 430 of Mr. Lees' 'Flora of West Yorkshire' will therefore still hold good, and the note at the top of page 798, which was due to my information, should be erased.

I have also to record the discovery of *Viola lutea* Huds. near Skipton. It grows sparingly at the entrance to Waterfall Gill, between Skipton and Rylstone. This is, I believe, a new locality record for the Aire drainage district. —T. W. EDMONDSON, Pembroke College, Cambridge, July 9th, 1890.

LEJEUNEA ROSSETTIANA IN NORTH-WEST YORKSHIRE.

R. BARNES,

The Gardens, Saltburn-by-the-Sea; Hon. Local Treasurer to the Yorkshire Naturalists' Union.

In April of the present year, while in search of mosses near Hudswell and Richmond my attention was taken by a species of *Lejeunea* (larger in size than *L. calcarea* Lib.) growing on patches of *Zygodon Stirtoni* and on faces of limestone rock, and which has since proved on examination to be *Lejeunea Rossettiana* Massal. The excellent descriptions given by Mr. W. H. Pearson and Dr. Spruce in Journal of Botany, November 1889 and December 1889, clearly mark the distinctness of this species from *L. calcarea* Lib. A portion was sent to Mr. M. B. Slater, F.L.S., who kindly informs me of its being the true plant and moreover that this is the first record of the species for North Yorkshire. I might add that the localities in which it was growing were precisely of the same character as those described by Mr. W. West, F.L.S., in Journal of Botany, May 1890.

NOTES ON NORTH OF ENGLAND ROCKS.

II.

ALFRED HARKER, M.A., F.G.S.

I PROPOSE in the present paper to describe a few more igneous rocks presenting characters of interest to a student of petrology. The numbers given in brackets [ ] refer to slides in the collection of the Woodwardian Museum, but the rocks are taken from well-known localities, and the descriptions will be found generally applicable.

(vii) *Hypersthene-quartz-gabbro of Carrock Fell, Cumberland.*—This rock is the 'hypersthenite' of Clifton Ward, which occupies a considerable area to the south of Carrock Fell. Dr. Trechmann has pointed out that the dominant pyroxenic element seems to be diallage, and he appears to question the occurrence of hypersthene. Examination shows, however, that in various specimens this mineral is nearly or quite as abundant as the diallage, and almost justifies Mr. Ward's naming of the rock.

Hand-specimens show a rather coarsely crystalline aggregate of dark pyroxenes and dull white felspars, with little vitreous grey patches of quartz. A slice [438] reveals the constituents and structure of the rock. Felspar is abundant in crystals giving rectangular sections and fine twin-lamellation: sometimes there are cross-striæ due to pericline-twinning as well as those following the albite-law. The mineral belongs to labradorite, or a variety between labradorite and bytownite. The rhombic pyroxene (hypersthene) is almost invariably converted into a pale-green fibrous serpentinous product—the so-called bastite—still preserving the rectangular contour of the original mineral. This substance is distinctly pleochroic, giving the strongest absorption when the length of the crystal is parallel to the shorter diagonal of the polarising prism. The hypersthene has evidently crystallised in general before the felspar, and so shows good crystal outlines; the diallage is of later consolidation, and forms irregular plates moulding round the other constituents. This diallage has a light-brown tint in section, and exhibits a typical 'diallagic' structure with minute rod-like interpositions grouped parallel to two or three definite directions. It gives the usual brilliant polarisation-colours between crossed Nicols.

Another mineral of later formation than the felspar is a brown dichroic mica, which, however, is often discoloured and partly decomposed. The earliest products of crystallisation in the rock are

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hexagonal prisms of apatite and rather irregular grains of magnetite. The last mineral formed is quartz, with a dusty appearance owing to a multitude of minute inclusions. This mineral—an uncommon one in gabbros—is wedged into the interspaces left between the earlier constituents.

The rock of White Crags was analysed by Mr. J. Hughes. His results seem to indicate about 50 or 51 *per cent.* of a labradorite-bytownite felspar, 28 of the pyroxenes, which cannot contain much alumina, 20 of quartz, and one or two *per cent.* of magnetite and apatite.

A slide [79] from the last-named locality shows the same general characteristics as before, except that the hypersthene is almost wanting. We see, however, a quantity of green hornblende with its characteristic cleavage, pleochroism, and low extinction-angle. Some of this is so associated with the brown diallage as to show that it has been derived from the alteration of the latter mineral, and this is probably the origin of all the hornblende in the rock.

(viii) *Granophyre of Carrock Fell.*—This rock, exposed on the upper part of Carrock Fell itself, is reddish to brownish-grey in colour, with minute porphyritic felspars and little greenish spots.

Under the microscope [890] we see that, with the exception of the little porphyritic felspar crystals, the rock consists of a ground-mass of felspar and quartz, the structure showing variations between certain limits. In places there is a finely granular texture, giving the 'microgranite' of some petrologists; but the most common type is the micropegmatitic, produced by a minute intergrowth of felspar and quartz, each mineral having a definite crystalline orientation over a considerable area in the slide, as is proved by rotating the stage between crossed Nicols, when the quartz over a large part of the field is found to be dark in one position, and similarly the felspar in another position. In natural light the clearness of the quartz and the turbidity of the felspar, which is partially decomposed, distinguish the two elements very clearly. Frequently, it may be noticed that the micropegmatite growth has grouped itself about the porphyritic crystals, in which case the felspar of the micropegmatite is proved (by its simultaneous extinction) to be in crystalline continuity with the crystal which has served as a nucleus. In other places there is a rather 'centric' arrangement of the intergrowth, independent of any nucleus. This is seen sometimes when the micropegmatite is on an excessively minute scale. From this, it is not a long step to the 'spherulitic' structure observable in some other specimens, in which the quartz and felspar are only imperfectly individualised, and the general effect is that of a radiate fibrous growth in which we may

imagine the minute fibres to be partly quartz, partly felspar. Such spherulites show a more or less marked black cross when viewed between crossed prisms.

Both Mr. Clifton Ward and Mr. Teall have made the interesting observation that the granophyre appears to pass gradually into the quartz-bearing gabbro noted above. Specimens may be collected to show a mingling of the characters of the two very different types. One such, from a loose block in Caldew Beck, has been examined [419].

Some portions of this slide show the most perfect and typical examples of micropegmatite together with grains of quartz and small crystals of felspar. The quartz predominates, and the grains are continuous with the quartzose element of the adjacent micropegmatite. Elsewhere in the same slice we see the larger felspar crystals with close twin-striation, the brown plates of diallage, the deeper brown partly decomposed mica, the green hornblende, probably secondary, the irregular magnetite grains, and the subordinate interstitial quartz of the gabbro type. There is a complete gradation. Hexagonal prisms of apatite occur throughout the slide, as do also irregular granules of light-brown highly refractive sphere.

(ix) *Spherulitic quartz-porphyry dyke at Greensides Mine, Helvellyn.*—This is a rock with reddish-brown ground-mass, enclosing crystals of both quartz and felspar. In a thin section [461] it exhibits a most beautiful illustration of the spherulitic structure. The ground presents a confusedly crystalline aspect, the quartz and felspar being only imperfectly individualised, though here and there one or other mineral has separated, and collected into a patch large enough to show its optical characters. The most striking feature, however, consists in numerous little spherical growths having a marked radial structure, and giving a black cross when seen between crossed Nicols. This last point is characteristic of spherulitic growths: where the structure is most typically developed, the cross is quite distinct, and on rotating the stage its arms remain fixed in direction, viz., parallel to the diagonals of the Nicol's prisms. This is evident only in the more perfect spherulites in the rock in question. The spherulites are partly free, partly attached to the porphyritic crystals and especially to the quartz. The ground-mass is further remarkable for containing innumerable little needle-shaped crystallites, which sometimes show a tendency to parallelism of position, and, in particular, lie parallel to the outline of any neighbouring porphyritic crystal—a well-known result of a flowing movement in the rock subsequent to the formation of both crystals and crystallites.

The porphyritic quartz, as well as the felspar, shows good crystal outlines, viz., those belonging to the hexagonal pyramid cut in various directions. These quartz crystals have irregular cavities communicating with the exterior, and filled by material similar to the ground-mass. The felspars are much decomposed. A few flakes of partly destroyed biotite and little rounded crystals of pinkish garnet complete the list of constituents. The latter mineral is easily recognised by its isotropic nature, which causes it to remain dark between crossed Nicols, and its high refractive index, which makes it appear to stand out from the other minerals in the slice. It is seen as little crystals of a deep-red colour in the hand-specimens.

The Greensides Dyke is very similar to a neighbouring one on Armboth Fell, which has been noticed by Clifton Ward and others, and a slice [756] of the latter rock presents the same general characters as the foregoing.

(x) *Microgranite of St. John's Vale, Cumberland.*—One of the most interesting points connected with the acid irruptive rocks is the variety of structural gradations which they exhibit between the plainly crystalline type of the granites on the one hand, and the glassy texture of some of the rhyolitic lavas on the other. Two main lines of transition may be recognised in the character of the ground-mass as seen under the microscope. One of these is through the granophyric varieties such as the micropegmatite of Buttermere and the spherulitic quartz-porphyry of Greensides and Armboth. A complete series of intermediate varieties of structure might be collected to fill the gap between the holocrystalline and the vitreous types. Another line of transition is furnished by the granite-porphyries, microgranites, etc., and consists in a simple diminution in the size of the constituent grains of the rock, the several constituents showing no sign of intergrowth, but remaining distinct so long as they are visible. Porphyritic elements may be, and usually are, developed in the varieties of both series.

An excellent example of a microgranite is the rock which constitutes several connected intrusive masses in the lower part of the Vale of St. John. It has to the eye a compact appearance and usually a grey colour, the porphyritic crystals of felspar being very small. Sections [15 and 460] show that these crystals consist exclusively of a plagioclase variety with fine twin-striation and narrow extinction-angles. The crystals are altered almost to opaqueness, and show rectangular outlines. Flakes of biotite are present in varying quantity; sometimes bleached with separation of magnetite, which remains as little granules between the cleavage-laminæ of the mica; sometimes converted into a bright-green chloritic substance,

which gives low polarisation-colours (neutral tints and indigo), and only partially preserves the form of the original flakes.

The ground-mass consists of a finely granular aggregate of quartz and felspar, the latter preponderating. The quartz is for the most part of anterior consolidation to the felspar, and forms clear grains of irregular shape imbedded in the later mineral. Calcite dust, giving bright red and green polarisation-tints, is among the decomposition-products of the felspar, indicating that that mineral contained a certain proportion of lime. Specimens from Shundraw [753] and Threlkeld [805] show identical characters. Mr. Hughes' analysis of the St. John's Vale rock seems to indicate about 24 *per cent.* of quartz, 16 of orthoclase, 40 of a felspar near oligoclase, and 20 of decomposition-products of felspar and mica. It is evident, therefore, that the felspar of the ground-mass must be in part of a soda-lime variety, or perhaps it may be a felspar containing both potash and soda.

(xi) *Granite, etc., of Eskdale and Wastdale, Cumberland.*—The normal type in this intrusion or set of intrusions is a granite of moderately coarse grain with red felspar, grey quartz, and dark mica. A slice from Stanley Gill [747] shows some interesting features, the most striking being the variety of acid felspars present and their intricate intergrowths with one another. Ordinary orthoclase is seen, and oblong crystals of a plagioclase of the albite-oligoclase series showing close twin-striation and low extinction angles. Besides these, we observe broad crystal plates showing a minute 'cross-hatched' structure between crossed prisms. This appearance, which is best seen when the crystal is nearly in the position for extinction, is distinctive of microcline, the triclinic potash-felspar. Again, the orthoclase is seen in many cases to be traversed by little irregular veins of another felspar, doubtless albite, which extinguishes between crossed Nicols in a rather different position from the orthoclase. All the little veins within one crystal extinguish simultaneously, and indeed the albite is intergrown with the orthoclase in a definite crystalline relation to its host. This is the so-called 'micro-perthite.' A precisely similar veining with albite is seen in some of the microcline crystals in the same slide.

All the felspars are partially decayed, and their turbid appearance contrasts with the quartz, which is the next important ingredient of the rock, in grains filling the interstices between the felspar crystals. The quartz, however, contains very numerous minute fluid-pores, which are mostly arranged in parallel lines in each grain. The remaining constituent is biotite, which, however, is highly altered by secondary changes. Much of the mineral is rendered black and opaque by impregnation with iron-oxides derived from its own

decomposition, but with this occur portions which are clear and colourless, and give bright pink and green polarisation-tints like those of white mica.

A slice from Muncaster Quarry, Ravenglass [952] shows most of the characters described above, including fine examples of the micro-perthite intergrowth. Specimens may be collected from other parts, however, which show a departure from the granitic type along one or other of the two lines of gradations noted above. One slide, for instance, shows a very typical micropegmatite [954]: another from Brantrake Moss is a microgranite very similar to that of St. John's Vale [748].

An analysis of the Eskdale granite agrees roughly with the composition: 27 *per cent.* of quartz, 20 of orthoclase and microcline, 45 of albite and albite-oligoclase, and 8 of decomposition-products of felspar, biotite, etc.

(xii) *Diabase or Dolerite of Castle Head, Keswick.*—This intrusive mass is of interest, according to Mr. Ward, as probably marking the site of one of the Ordovician volcanoes which gave vent to the lavas of the Borrowdale series. The rock shows an intimate admixture of black augite and light-coloured felspar stained with greenish secondary-products. In this some of the little augite crystals stand out prominently enough to impart a porphyritic appearance.

Under the microscope [755] these crystals give outlines rectangular in longitudinal and octagonal in transverse sections, the characteristic cleavage-cracks parallel to the faces of the prism being well marked. The polarisation-tints are of a high order. The crystals are frequently twinned, a peculiarity brought out clearly between crossed Nicols, where the two individuals of a twin give different tints and extinguish the light in different positions. In addition to this, two or three crystals are usually grouped together so as to interfere with one another's growth.

The ground-mass has been composed of plagioclase felspar and augite, but the latter mineral is totally destroyed, and the little oblong crystals of felspar are for the most part deeply altered. Little irregular patches and skeleton-crystals of black opaque magnetite are scattered about the slice. The secondary products include clear quartz granules, dust of calcite, stains of red-brown iron oxide, a pale chloritoid material with low polarisation-tints, and serpentine. The last-named substance is chiefly collected in little veins in the rock, and has a fibrous structure, the fibres being set perpendicular to the walls of the vein. The serpentine gives low colours of polarisation, being nearly dark between crossed Nicols and extinguishing parallel to its fibres.

AN OUTLINE OF THE GEOLOGICAL HISTORY OF UPPER SWALEDALE.

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The rocks of Swaledale consist chiefly of the Lower Carboniferous Series, i.e., the Yoredale Rocks and the Mountain Limestone. Detached remnants of the basal members of the Millstone Grit, now represented only by outliers of the Kinder Scout Grit Series, and the beds above this up to the base of the Third Grit, also occur on the hill tops in places. The whole of the Carboniferous rocks of this area are of marine origin, and represent thalassic deposits laid down in connection with the delta of a large river, which drained part of a continent lying far away to the north-west. During a prolonged, but slow, subsidence, occasionally varied by slight movements of upheaval, or by pauses when no movement took place, the delta referred to gradually advanced its seaward margin in a south-easterly direction ; but the rate of advance was so slow that it was not until near the close of the Yoredale period that the delta itself actually reached this point. Prior to that event the strata deposited here were, at first, mainly organico-chemical (limestones). Then, as the delta approached somewhat nearer, alternations of limestones, sandstones, shales, coals, and cherts were left, piled one above another in regular layers to a considerable thickness. Finally, when the old delta had pushed its way seaward so far as to actually reach this part, little else than grits, shales, and coals were laid down, the deeper-sea deposits and those proper to clear water being, of course, wanting. But while these conditions obtained in what is now Swaledale, deeper water and clearer water conditions still prevailed miles away towards the south-east, and were, in their turn, pushed still farther out to sea as the delta grew towards them.

This preliminary explanation will enable us to understand how it came about that the lowest marine beds of the Carboniferous period consisted almost exclusively of limestone here ; and how it happened that, as we trace the succession of the rocks upward, we find, on the whole, the relative thickness of the clear-water deposits to those of detrital origin becoming less and less, until, when we reach the Millstone Grit, true limestones are hardly to be found at all.

The rocks of the upper parts of the dale consist chiefly of the Yoredale rocks, so named by Prof. Phillips from Yoredale or the dale of the Yore (Wensleydale), where strata of this age are well exhibited. The Yoredale Rocks may be described as consisting of

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seven principal beds of marine limestone (with others of lesser importance), each of which is directly overlain by beds of a shaly nature, and each, as a rule, is succeeded below by a bed of sandstone. All the true Yoredale strata are persistent over a very large area, the limestones being so to an extent little short of marvellous; although, of course, minor local variations may here and there be detected if carefully sought for. The total thickness from the base of the Millstone Grit above to the top of the Mountain Limestone below is subject to some variation, but 1,500 ft. may be safely taken as a fair mean for the whole.

Counting from above downward, the beds of limestone best known may be stated as follows, those most persistent being distinguished by an asterisk:—Crow or Fell Top Limestone; *Red Bed Limestone; *Main, Twelve Fadom, or Great Limestone; *Undersett Chert and Undersett Limestone or Four Fadom Limestone; *Third Sett or Three Yards Limestone; *Fourth Sett or Five Yards Limestone; *Fifth Sett, Middle, or Scar Limestone; *Sixth Sett or Simonstone Limestone; *Seventh Sett or Hardra Limestone. Below follow the various subdivisions of the Mountain Limestone, whereof the highest bed is seen in Wensleydale near Askrigg, etc., and again in the long inlier on the south bank of the Swale between Muker and Gunnerside. Above the Main Limestone occurs a remarkable series of siliceous beds, which the present writer described many years ago as of organic origin, and of the same general nature as the siliceous deposits brought to light in the course of the late deep-sea researches. These siliceous rocks (Main Chert, Red Beds, etc.) play an important part in connection with the mining industries of the district. When weathered these rocks pass into rotten stone.

Long after all the Carboniferous rocks had been deposited, the whole region underwent considerable disturbance, and most of the leading flexures, as well as the leading faults, including the Pennine Fault, affected these rocks for the first time. It was at this period that the initial tilting of the strata towards the north-east took place.

At a later period came prolonged upheaval, accompanied by enormous denudation, many thousands of feet of Carboniferous rocks being stripped off, in course of time, from this area alone.

Subsequently, the New Red (including under this term all the post-carboniferous rocks of older date than the Rhætics) were spread out over the whole of the North of England. As the so-called 'Permian' is only the basement bed of the Jurassic Series, it follows that these rocks also once extended continuously over the whole of Swaledale.

Much later on followed yet another long period of disturbance, upheaval, and consequent denudation. This episode was followed by one of prolonged and steady subsidence, during which the Upper Cretaceous Rocks were spread out over nearly the whole of the British Isles. Not until long after that did any of our mountains—or indeed any other of our great natural features—begin to appear.

When at last the River Swale began to flow, which was in late tertiary times, the surface rock was probably the Chalk, and the river took its rise, not where it does now, but far away to the west, where now are the lowlands of Edenside. Underneath the Chalk in Upper Swaledale extended the thin edge of the New Red Rocks, now denuded back to the Vale of York. Prolonged exposure to denudation stripped off first the Cretaceous Rocks, then the New Red, and finally exposed the plateau, gently inclined to the east, upon which these last rocks had been laid down. At this time the plateau just mentioned was probably not at a very high level above the sea. But after the valley of the Swale had been, so to speak, outlined, in the higher part of the plateau, great volcanic disturbances affected all the north-western parts of the kingdom. The volcanic rocks of the Western Islands of Scotland were formed, and these disturbances were accompanied, over a much larger area, by earth movements of great importance. Vast upheavals of strata took place, the last great dislocation along the line of the Pennine Fault occurred, the Swaledale *Massif* was upheaved to more than 2,500 ft. above the level of the sea, and the present order of geographical features generally was instituted. But the most important result, so far as Swaledale is concerned, was that due to the action of thermal springs, which uprose towards the surface over large areas as the great volcanic episode was on the wane. It was these thermal springs, rising through the old faults, where these were stretched open during the upheaval of the district, that carried upwards the solutions containing the metallic sulphides, which, when the rising currents cooled, were left in the old fissures as the valuable lead veins for which North-west Yorkshire has so long been famous.

The present summit-level joining the highest fell-tops of Swaledale represents the modified descendant of the old plateau referred to above, and it is out of this old plateau, by the prolonged action of Subaërial Denudation, that the present valleys have been carved in the course of long ages.

Long after the valleys and all the larger natural features had been carved out by denudation into nearly the same form they exhibit at the present day, set in the commencement of that long succession of periods of increasing cold, which culminated in the climax of the

Glacial Period and the formation of the great Ice Sheet. Throughout all the earlier part of the Glacial Period the Dale seems to have been occupied by simple glaciers, which flowed down the valleys, or from the heart of the mountains, towards the lowlands. The prolonged excavation arising from this cause resulted in the removal of the whole of the weathered rock disintegrated by exposure during pre-glacial times. Necessarily, the greater part of the weathered rock so removed was eroded where the ice acted with greater force, so that the bottoms of the valleys were considerably deepened by this cause alone. Another result followed—ice, in eroding a rock surface, acts differently from water, and the results are therefore different in their kind from what would have been effected by simple weathering. It is to this cause that the present writer attributes the formation of the remarkable terraces and scars of limestone, etc., so well displayed in the adjoining dales. To this cause also he attributed the formation of the coums and other hollows with sweeping curvature, which form some of the most characteristic features of the district. The general effect of the ice-erosion was to impart to the newly-carved rock surface a flowing contour, and an association of scars and terraces which are quite different from what would naturally result from simple atmospheric erosion. These features are much more strongly marked in such districts as Wensleydale, where the flow of the ice from first to last did not vary much in direction, if it ever varied at all.

Near the climax of the Glacial Period, when the glaciers had become confluent, and their conjoinal surface rose to its highest level, the prevailing directions of movement of the ice in the upper parts of Swaledale were influenced by causes acting from outside the district. As a consequence, the flow of the ice in all the area referred to, instead of being along the valley and downhill, was towards the north-east, across the valleys, and in many cases uphill. This transverse movement of the ice extended even to its bottom strata, which, even at the very lowest parts of the valleys traversed, here impelled across the low ground and up the hills on the opposite side. The valley of the Swale above Keld is thus striated right across, in the very bed of the river itself; and the ice that effected this striation certainly moved steadily up the hill on the north-side of the Swale, and thence right away over the fells until its direction was merged into that of the ice-currents then prevailing on Stainmoor. Complicated results followed from this change of direction; but with these we are not concerned here.

What became of all the preglacially weathered rock thus removed by the outward flow of the ice? Some of it, certainly, flowed away

within the ice at least as far as the Yorkshire coast; but the material detached from the rock surface by the ice did not all go out of the Dale. Some of it was released when the ice melted—released as if it were a kind of sediment—and it is this glacial sediment of stones, mud, sand and boulders, that now constitutes the glacial drift, in every one of its many different forms. Till, sand and gravel, and washed drifts of all kinds here are simply so much material that was formerly dispersed throughout the body of the ice (not on it, or under it, but *within* the ice) and when this ice melted the drift are the sediments it left behind.

In Swaledale, as elsewhere, there is abundant evidence that the Ice Sheet ceased to move somewhat abruptly, and that it began to melt away on the spot soon after the icy flood attained its maximum. *Why* it did so has not yet been satisfactorily explained; but so it did; and it certainly did not wane in reverse order through all the changes that marked its waxing. The striæ left by the ice when at its maximum have hardly ever been effaced by later movements in different directions. It would seem, however, that some time after temperate conditions had taken the place of the rigorous arctic conditions just referred to, a later period of cold, very much less intense than what preceded it, did obtain here. Here and there in the heart of the larger mountain areas, a tiny glacier seems to have been nourished, and this may really have, locally, pushed out some of the older glacial sediments, and striated the rock surface in new directions. But it is doubtful, very, whether this can be shown to have been the case in Swaledale.

At no time during the Glacial Period, or since then, does the Dale appear to have been submerged a single foot beneath the sea. Nor is there any evidence whatever of the transportal into Swaledale of any of the far-travelled boulders that represent the stream netted out of the Stainmoor current of the Ice Sheet.

After the close of the Glacial Period (at the most not more than 20,000 years ago) sub-aërial denudation renewed its attacks upon the rock-surface of Swaledale. Waterfalls again started into existence, and have had time to cut back into long ravines; scars began to crumble away, and again to weather into something like their pre-glacial contours; vegetation gained a footing; Neolithic man entered upon the tracts whence—untold ages before—his Palæolithic fore-runner had been driven by the advance of the Ice Sheet; and, finally, the Dale gradually began to assume, under the action of sub-ærial forces, something of the varied and beautiful aspect which characterizes it at the present day.

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SOME OF THE BIRDS OBSERVED IN UPPER SWALEDALE.

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Turdus viscivorus. Jay Throstle.

Turdus musicus. Bell Throstle.

Turdus iliacus.

Turdus pilaris. Fe-faw.

Turdus merula.

Turdus torquatus. Ring-wuzel. Summer visitant; breeds commonly on the fell-sides; nests in the Buttertubs.

Saxicola œnanthe. Summer visitant, common.

Pratincola rubetra. Commonest in summer.

Pratincola rubicola. Less common resident.

Ruticilla phœnicurus. Firetail. Summer visitant, common about stone walls in the valleys.

Erithacus rubecula. Valley resident, common.

Accentor modularis. Do. do.

Sylvia cinerea. Valley resident, not common.

Sylvia hortensis. Valley resident.

Acrocephalus phragmitis. Valley resident, not common.

Phylloscopus trochilus. Summer visitant, common in the valley.

Phylloscopus sibilatrix. In woods; summer visitant, common in the valley.

Regulus cristatus. In larch woods; common resident.

Parus major. Valley resident, common.

Parus cœruleus. Valley resident, common.

Parus palustris. Do., do.

Cinclus aquaticus. Bessie Douker. Resident, common in all the water-courses up to the valley-heads.

Troglodytes parvulus. Valley resident, common.

Motacilla lugubris. Do. do.

Motacilla melanope. Summer visitant, in the valleys.

Anthus trivialis. Summer visitant, in the valleys, common.

Anthus pratensis. Ubiquitous resident.

Muscicapa grisola. Summer visitant, in the valleys, common.

Hirundo rustica. Do. do.

Chelidon urbica. Do. do.

Cotile riparia. Summer visitant, in the valleys, not common.

Certhia familiaris. In woods, resident, not common.

Carduelis spinus. Observed on migration, not common.

Fringilla cœlebs. Scobbie. Resident, commonest in summer.

Acanthus cannabina. Summer visitant, not common.

Acanthus rufescens. Observed on migration.

Acanthus flavirostris. Observed on migration only.

Pyrrhula europæa. Valley resident, common.

Loxia curvirostra.

Emberiza citrinella. Spink. Valley resident, common.

Plectrophanes nivalis. A regular visitant on migration, chiefly confined to the moory uplands.

Sturnus vulgaris. Sheep Starling. Not known thirty years ago, but rapidly increasing. Summer resident only.

Pica caudata. Pyet. Common.

Corvus monedula. Jack. Breeds in every village, and in most of the crags.

Corvus corax. Formerly bred in the crags near the head of the dale. One pair bred for years in a large swallow-hole there; now nearly exterminated by gun, trap, and poison.

Corvus corone. Corbie. Breeds in trees up to their uppermost limit on the fells.

Corvus cornix. Almost unknown.

Alauda arvensis. Lavrock. Not common.

Cypselus apus. Summer visitant, not common.

Alcedo ispida. Not common.

Cuculus canorus. Gouk.

Strix flammea. Valley resident, not common.

Asio otus. Not uncommon in the woods.

Asio accipitrinus. Has bred occasionally on the moors; not a regular migrant here.

Syrnium aluco. Jinnie Hewlet. Common in all the woods.

Buteo vulgaris. Occasionally breeds even yet in the crags about the dale head; rare generally.

Accipiter nisus. Breeds commonly in the woods.

Milvus ictinus. Glead. Not rare thirty years ago; now exterminated.

Falco peregrinus. A regular visitant on migration; and one or more pairs attempt to rear a brood nearly every year in the crags about the dale head. Most commonly seen in August.

Falco æsalon. A few pairs attempt to breed every year on the moors. Found only from about May to about October.

Falco tinnunculus. Steangall. A ubiquitous resident, breeding chiefly in the scars and crags.

Ardea cinerea. Hernshew. No longer breeds in the dale.

Anas boschas. Breeds occasionally in rushy spots near the dale heads.

Querquedula crecca. Breeds more commonly than the last, in similar places.

Columba palumbus. Cushat. Valley resident, common in summer.

Columba œnas. Not known as yet.

Columba livia (? or feral Domestic Pigeon). Breeds here and there in the crags.

Tetrao tetrix. Only where introduced.

Lagopus scoticus. Moor Game. Fell resident.

Crex pratensis. Deaker Hen. Summer visitant, common in the valley.

Charadrius pluvialis. Chiefly a summer resident; breeds on the moors.

Charadrius morinellus. Formerly bred; now only occasionally seen (and shot) during migration.

Vanellus cristatus. Tewfit. Nearly ubiquitous, but chiefly resident in summer.

Scolopax rusticola. Occasionally seen on the moors, and may, possibly, occasionally breed in the woods.

Scolopax gallinago. A few pairs breed in the bogs.

Scolopax gallinula. Winter visitant.

Tringa alpina. Many pairs breed on the fell tops, but none remain through the winter.

Totanus hypoleucos. A common summer resident.

Numenius arquata. Breeds on the fell tops, commonly, but does not remain through the winter.

NOTE—BIRDS.

Curious Incident relating to a Blackbird's Nest.—A lot of laurels were brought from some distance to be planted in a gentleman's garden at Harrogate. They were laid down for some time, of course with the roots covered over. During this time a Blackbird (*Turdus merula*) built its nest among them. This was discovered when the laurels were wanted for planting out. The nest, however, was taken care of, and placed securely in the laurel it was originally built in, and, surprising to relate, the bird took possession of the nest in its new position, and continued the incubating of the eggs with what would no doubt have terminated in a happy result but for a stupid workman who one day threw a clod at the bird as she was sat on the nest; which so frightened her that she deserted the eggs.—R. FORTUNE, Harrogate, June 16th, 1890.

SOME OF THE FLOWERING PLANTS AND OF THE FERNS OF UPPER SWALEDALE.

J. G. GOODCHILD, H.M. Geol. Survey, F.G.S., F.Z.S., M.B.O.U.

Anemone nemorosa. Woods, common.

Ranunculus aquatilis. Pools to 1,500 feet.

Caltha palustris. Goudilocks. In the valleys, common.

Trollius europæus. Fell pastures to 1,000 feet, common.

Cochlearia officinalis. Wet rocks in calcareous districts.

Draba incana. Crags, very local.

Helianthemum vulgare. Dry parts of crags and fell sides to 1,000 feet, common.

Viola lutea. Common in the drier meadows, especially above Muker.

Drosera rotundifolia. Very local in sheltered boggy places.

All the commoner species of *Silene* and of *Lychnis*. *L. viscaria* not known.

Sagina nodosa. Dry meadows and well-drained scar-tops, especially on limestone near lead-mines, common.

Arenaria verna. Common everywhere around old lead-mines at all elevations; rarely found elsewhere.

Stellaria nemorum. In the shady parts of the woods between Muker and Keld.

Hypericum perforatum. Common.

Hypericum quadrangulum. Common.

Hypericum pulchrum. Common.

Hypericum montanum. Common.

Geranium sanguineum. Found in one or two of the crags near the dale-head.

Geranium phæum. By the road-side between Muker and Gunnerside.

Geranium sylvaticum. Common in the valleys.

Geranium pratense. Common in the valleys

Geranium lucidum. Abundant on the old walls in the valleys.

Prunus padus. Hecktri tree. In all the wood margins.

Spiræa ulmaria. In moist meadows, abundant.

Geum urbanum. In the valleys, abundant.

Geum rivale. In moist shady places low down, common.

August 1890.

Potentilla fruticosa. Not known.

Potentilla tormentilla (with *Galium saxatile*). Ubiquitous to 2,400 feet.

Comarum palustre. Only in bogs low down, very local.

Rubus chamæmorus. Locally abundant on the moors; its fruit is always devoured before ripening by the moor birds.

Rubus saxatilis. In moist woods, especially below Keld, rather common.

Rosa spinosissima. In dry places below 700 feet, rather common.

Rosa tomentosa is the commonest rose.

Agrimonia eupatoria. In drier parts of woods, especially among limestone, common.

Poterium sanguisorba. In dry pastures, very common.

Alchemilla vulgaris. To 1,000 feet, very common.

Alchemilla arvensis. Chiefly on wall-tops and on limestone crags.

Pyrus aucuparia. In sheltered spots to 2,000 feet, common.

Epilobium angustifolium. Undoubtedly wild in valley-bottoms, to 1,600 feet.

Montia fontana. Common at all elevations in 'swangs' and springy spots.

Sedum rhodiola. In sheltered spots on limestone crags to 2,000 feet.

Sedum villosum. By the wet margins of hill-side springs to 1,600 feet.

Saxifraga aizoides. In limestone swallow-holes near the head of the dale; very local.

Saxifraga stellaris. On limestone rocks up to 1,800 ft., common.

Saxifraga granulata. In the woods below Keld.

Saxifraga tridactylites. Abundant on all the old walls in the valleys.

Chrysosplenium oppositifolium. Everywhere about wet rocks to 2,000 feet.

Parnassia palustris. Abundant on many of the upland bogs.

Adoxa moschatellina. In the woods, common.

Sanicula europæa. Do. do.

Galium verum. Common.

Galium cruciatum. Do.

Galium palustre. Do.

Galium saxatile. Common.
Galium uliginosum. Do.
Galium mollugo. Do.
Galium aparine. Do.
Asperula odorata. Abundant in the woods around Kisdon Foss, etc.
Valeriana dioica. In the valleys, common.
Scabiosa succisa. Pastures, common.
Picris hieracioides, Leontodon hirtus, Hypochœris glabra. Lactuca muralis, Crepis virens, Hieracium pilosella, H. murorum, Lapsana communis, well represent the Compositæ and are of general occurrence.
Carduus nutans is common on the limestone outcrops.
Centaurea nigra. Knops. Dry pastures, common.
Gnaphalium sylvaticum. In the woods, common.
Gnaphalium dioicum. Dry fell-sides.
Gnaphalium arvense. May be introduced.
Solidago virga-aurea. In the woods, common.
Senecio jacobæa. Common.
Senecio aquaticus. Do.
Senecio sylvaticus. Do.
Achillea ptarmica. Fell pastures to 1,800 feet, common.
Campanula latifolia. Abundant in valleys.
Campanula glomerata. Chiefly on calcareous soils, common.
Erica cinerea. Not uncommon on many of the crags in sheltered spots to 1,800 ft.
Erica tetralix (Bell Heather) and **Calluna vulgaris** (Ling) form nearly all the heath.
Arctostaphylos uva-ursi. Common locally.
Vaccinium myrtillus. Bleaberry. Abundant on moory ground at all elevations.
Vaccinium oxycoccus. Singularly local in distribution; found in the bogs near the Buttertubs, but not generally common in Swaledale *now*; perhaps because exterminated.
Gentiana campestris. Common on dry rocks, especially limestone.
Gentiana amarella. Do. do.
Primula farinosa. Bonnie Birdeen. Fell pastures to 1,600 feet, abundant.
Menyanthes trifoliata. Bog Bean. Locally common in the lowland bogs.

Veronica spicata, V. anagallis, V. beccabunga, V. officinalis, V. chamædrys, V. montana, V. arvensis, and **V. buxbaumii** all occur.

Euphrasia officinalis. Common.

Rhinanthus crista-galli. In meadows, very common.

Melampyrum sylvaticum. Common in the woods around Muker.

Pedicularis palustris. Abundant on the moors.

Scrophularia nodosa. By the Swale, common.

Digitalis purpurea. In valleys and woods, abundant.

Linaria vulgaris. In the valleys, common.

Lathræa squamaria. Occasionally found in the woods around Muker.

Origanum vulgare. On dry limestone soils, to 1,000 feet, rather common.

Ajuga reptans. In shady places, to 1,000 feet, common.

Prunella vulgaris. In shady places in the valleys, common.

Myosotis palustris. Only in the lower parts of the valley.

Symphytum officinale and **Borago officinalis** occur, but may be escapes.

Pinguicula vulgaris. Fell pastures and moors, to 2,000 feet in sheltered spots, common.

Lysimachia nemorum. In woods below Keld.

Several species of *Chenopodium* occur, but some may be escapes, as *Ch. bonus-henricus* (and ? other species) are used for 'yarb puddins.' The same remark applies, locally, to *Polygonum bistorta*, though this is common in the wild state also.

Polygonum viviparum. Grows on many of the wet crags above Keld.

Empetrum nigrum. Locally found on the moors to 2,000 feet.

Salix herbacea and **S. repens** are both found, with, also, others.

Myrica gale. Locally common in boggy spots.

Juniperus communis. On the hill-sides above Keld, Muker and Thwaite, common.

Listera ovata. Fell pastures, common.

Habenaria albida. Do. do.

Allium ursinum. Ramps. Far too common in all the woods.

Paris quadrifolia. Locally in woods below Keld, rather common.

Several species of *Potamogeton* occur in quiet pools up to 1,800 feet.

Narthecium ossifragum. On boggy ground, even in the uplands, common.

Ceterach officinarum. Grew on a dry wall below Gunnerside, in the 'sixties.'

All four British species of *Polypodium* are common.

Polypodium dryopteris and **P. phegopteris** both occur below Keld.

Allosorus crispus is locally abundant on upland crags, *where no calcareous matter is present.* It *never* grows on limestone.

Cystopteris fragilis is one of the commonest ferns on dry crags, old walls, etc.

Polystichum lonchitis is exterminated.

Polystichum aculeatum is yet abundant.

Lastræa oreopteris is very abundant locally, especially on the sheltered parts of the fell-sides.

Asplenium viride is abundant in limestone joints, deserted lead-mine levels, etc.

Asplenium trichomanes has a wider habitat.

Asplenium adiantum-nigrum occurs very locally; it is found on some of the crags near the dale-head; also below Gunnerside.

Blechnum boreale. Common.

Hymenophyllum tunbridgense has been met with near one of the fosses in Swaledale.

Botrychium lunaria is locally not uncommon in dry meadows near Muker.

Ophioglossum vulgatum is found on a limestone pasture near Keld.

Lycopodium clavatum, L. alpinum, and **L. selago** occur on the higher moorlands, from 1,500 feet upwards.

Lycopodium inundatum is locally found in small numbers near the fell-side springs.

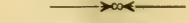
NOTES—MAMMALIA.

Seal on Coast of Durham.—A *Phoca gryphus* was picked up on March 17th, 1887, in the sea between Hartlepool and Seaham; it weighed 35 stone, was 8 ft. long, and nearly 6 ft. in girth.—J. W. L. T. Fawcett, The Grange, Saltley.

Natterer's Bat near Thorp Arch.—I am pleased to be able to record an occurrence of Natterer's or the Reddish-gray Bat (*Vespertilio nattereri*) for this district. On the 11th inst., walking from Thorp Arch Station towards Walton, I found the bat lying on the road, but recently dead, as it was quite warm and bleeding at the mouth and nose. On opening the Bat I found the front of the skull smashed as though it had flown against, or been struck by something. It is a female and weighed 115 grains.—Edgar R. Waite, The Museum, Leeds, 21st July, 1890.

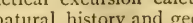
NOTES AND NEWS.

A collection of drawings from the pencil of Mr. John Hancock, the eminent naturalist, has just been presented by him to the Natural History Society, Newcastle-on-Tyne, and they are now on view in the Museum at Barras Bridge. The drawings consist chiefly of studies of birds from life, and were sketched by Mr. Hancock to assist him in setting up the beautiful collection of stuffed birds which forms so prominent a feature of the treasures in this museum. They are contained in thirty-two frames, of which two are devoted to numerous miscellaneous coloured sketches, amongst which are depicted a pair of Elephant Hawk Moths found near the Thames, Bananas in flower at the Crystal Palace, Fungi and Edible Chanterelles. The remaining frames, with the exception of the last (which contains drawings of various quadrupeds), consist entirely of drawings of birds, mostly from life—Hawks, Teal, Cormorants, Gulls, Herons, etc., and numerous small birds, displaying their characteristic attitudes whilst feeding, swimming, sleeping, etc., and often introducing their natural surroundings with highly artistic treatment. The sketches range from the mere outline of a head, foot, or wing, to beautifully finished water-colour drawings of birds and groups of birds. Among the latter must be mentioned a very fine study of dead game in black and white, and another frame containing three groups of Red-necked Phalaropes, Stonechats, and Blue Tits, together with several designs for cases of stuffed birds, amongst which is a sketch of an Eagle attacking a Heron, to which we can trace the design of the magnificent central case in the Bird-room of the Museum—'The Eagle attacking Swans.' There is besides a frame of brilliantly coloured designs for the Hewitson case of Birds of Paradise, bequeathed to the British Museum. The whole of the sketches are characterised by the life-like appearance and natural attitudes of the subjects, and are in strong contrast in this respect to Bewick's drawings for his book of birds, which hang in the next gallery, and which appear for the most part to have been sketched from stuffed specimens, and these by no means irreproachable examples of the ornithologists' art. Enthusiastic collectors of Bewick's works are often liable to extend to him as a naturalist the admiration which as a reviver of wood-engraving he is certainly entitled to. This collection of Mr. Hancock's studies reveals the source of the life which he has breathed into the feathered occupants of his cases in the Bird-room below, and the secret of the success which has attended his labours in this branch of natural history, surpassing perhaps any of his fellow-workers in the same field. The Natural History Society of Newcastle is to be congratulated on its recent valuable acquisition, and we deeply regret that Mr. Hancock's failing health renders him unable to continue his labours in a field in which he is so distinguished a worker.



It will not be out of place to refer to the approaching meeting of the British Association in Leeds, and to remind such as propose to read papers that they should send an abstract (along with the paper itself) to the General Secretaries of the Association in London, on or before the 6th August.

One of the excursions in connection with the Leeds meeting of the British Association will be to Malham Tarn and Cove, and Gordale Scar, on Thursday, Sept. 11th, has been placed in the hands of the Yorkshire Naturalists' Union, and will be organised as a practical excursion calculated to prove of considerable interest to field-workers in natural history and geology, the district being remarkably productive in almost every branch of the natural sciences.



We note with a considerable amount of regret that our Liverpool contemporary 'Research' has ceased to exist at the end of its second volume. In the hands of Mr. Norman Tate it was so ably conducted that its appearance was looked for with pleasurable anticipation by numbers of readers, who will now much miss its excellent portraits and memoirs, and its well-written and adequately illustrated articles on the scientific aspects of health-resorts.

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BOOKS RECEIVED.

Smithsonian Institution.—Annual Reports, 1886 (part 2) and 1887 (in two parts). 8vo, cloth, 1889. [The Institution.
Dr. Angust Otto.—Zur Geschichte der ältesten Haustiere. 8vo. 1890, 78 pages. [The Publishers.
Leeds Geological Association.—Transactions, Part 5, 1889. [The Association.
Die Schwalbe, Jahrg. 14, Nr. 13 & 14, Juli 31 & Aug. 15, 1890. [Orn. Vereins in Wien.
Science Gossip, No. 308, for Aug. 1890. [Messrs. Chatto & Windus, publishers.
The Young Naturalist, Part 128, for Aug. 1890. [Mr. John E. Robson, editor.
The Zoologist, 3rd Series, Vol. 14, No. 164, Aug. 1890. [J. E. Harting, editor.
Entomologist's Rec. & Jn. of Variation, No. 5, Aug. 1890. [J. W. Tutt, editor.
Notarisia, Ann. 5, No. 19, 30 Giugno, 1890. [D. Levi-Morenos, Redattore.
Revue Bryologique, 17e Année, 1890, No. 4. [M. T. Husnot, redacteur, Cahan.
The Midland Naturalist, No. 151-2, July-Aug. 1890. [Birmingham Nat. Hist. Soc.
Nuova Notarisia, 1 Agosto, 1890. [Dr. G. B. de Toni, redattore, Padova.
Records of the Australian Museum, Vol. 1, No. 3, July 1890. [The Trustees.
S. L. Mosley.—Hist. of Brit. Birds, Nests and Eggs, No. 65, Aug. 1890. [Author.

For Sale.—Talbot's Birds of Wakefield, 2s. 6d. Address, Eds. Naturalist.

In Preparation.

A Monograph of the Land and Fresh-Water Mollusca of the British Fauna.

The work is intended to be full, detailed, and exhaustive, and adequately illustrative of Variation, Development, and Geographical Distribution.

Co-operation is invited from all interested, and any information or specimens (the common species of every district are particularly desired) will be welcomed and carefully acknowledged. The Authors may be addressed—c/o Mr. JOHN W. TAYLOR, Office of the Journal of Conchology, Sovereign Street, Leeds.

Information is at present specially required on the Slugs (*Testacella*, *Limax*, and *Arion*), of which living specimens from every district are desired.

Improved Egg Drills (2 sizes) and Metal Blowpipe with instructions 1/3 free. 'Hints on Egg Collecting and Nesting,' illustrated, 3½d. free. Birds' Skins, Eggs (side-blown and in clutches with date), Lepidoptera, Ova, Larvæ, and Pupæ, Artificial Eyes, and all kinds of Naturalists' Requisites. Lists, one stamp. All specimens, &c., sent out 'on approval.'

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The cheapest dealer in Birds, Skins, Eggs, Butterflies, Moths, Foreign Shells, etc., is **John Eggleston, Park Place, Sunderland.** Lists free.

AN ADDITIONAL STATION FOR ARENARIA GOTHICA IN WEST YORKSHIRE.

WILLIAM WHITWELL.

Yorkshire botanists will be glad to know that there is now considerable likelihood of *Arenaria gothica* Fries proving to be native to the county. The Ribblehead Station locality, unsupported by others, is certainly inconclusive.

But on Monday, August 18th, the plant was gathered by Dr. Silvanus P. Thompson and his sister, Miss R. F. Thompson, at a spot three miles distant from Ribblehead, and away from any railway. Further particulars about the locality must be supplied later. Dr. Thompson, in the course of a walk some days before, noticed a plant which seemed to him to resemble *A. gothica*, and on the 18th instant he revisited the place along with Miss Thompson, by whom the characters of the Ribblehead *Arenaria* were at once recognised in the specimens they collected. Some of these specimens reached and were identified by me, on the 20th, and on the same day Mr. N. E. Brown, of Kew, also examined them.

The perennial character of the Ribblehead plant has now been placed beyond a doubt. I have received specimens at intervals through the autumn, winter, and spring, so that a whole year's stages have been seen. Plants (transplanted direct from Ribblehead) were grown by me, and these put forth winter shoots in the same manner as an ordinary Dianthus; unfortunately, the latest frost killed the plants. The winter and spring specimens were mature ones, bearing last year's dead capsules, even after this year's spring flowering had actually commenced.

With much regret I have to add that the very existence of the plant at Ribblehead is endangered. In September, 1889, Mr. F. A. Lees saw 'hundreds' of plants there. I am told that now there are comparatively few. One friend writes that 'it will not be there through another season.' The explanation is, I fear, to be found in what is said at Ribblehead: 'dozens of collectors have been here this year.' I would ask all botanists to pass a 'self-denying ordinance' and to scrupulously refrain from taking or obtaining specimens for the next two years at least. A similar appeal will be made through the 'Journal of Botany.'

[We trust that Mr. Whitwell's appeal to collecting botanists will meet with a hearty and universal acceptance, so that so interesting a species may be preserved to the West Yorkshire Flora for many years to come.—Eds. Nat.]

EASTERN TURTLE DOVE IN YORKSHIRE.

JAMES BACKHOUSE, Jun., F.Z.S., M.B.O.U.,
Hon. Curator in Ornithology to the Yorkshire Philosophical Society's Museum, York.

Early last autumn (October 23rd), a specimen of the Eastern Turtle Dove (*Turtur orientalis*) found its way, amongst other interesting birds, to Scarborough, and was captured near to that town by a local gunner and preserved by Mr. Head.

The bird has since come into my possession and was forwarded for identification to Mr. Seebohm, who writes (April 9th, 1890):—

'The Pigeon is a bird in first plumage of *Turtur orientalis*, and is probably a wild bird, as it has occurred more than once in Scandinavia. . . . It is a most interesting addition to the list of accidental visitors to England.'

Although the specimen in question was kindly exhibited for me by Mr. Seebohm at a meeting of the Zoological Society, held on May 6th, it is only right that its occurrence should be noted in the pages of 'The Naturalist' as a new Yorkshire bird.

[It is of interest to add that by Mr. Backhouse's kindness this specimen now forms part of the collection in the York Museum.—Ed.].

NOTE—ORNITHOLOGY.

Remarkable Swallows' Nests at Wilstrop, near York.—Visiting at Wilstrop Hall, near York, a short time ago, Mr. John Harrison drew my attention to several nests built under the eaves of his house. By the aid of a ladder I was able to inspect them more closely. There were five nests in all, three of which were Martins' (*Chelidon urbica*) and two were Swallows' (*Hirundo rustica*). The Martins' nests were not remarkable, being built as usual close under, and touching the spout, with the entrance in the side. The swallows' nests were noteworthy inasmuch as they were built against the wall *unsupported by any ledge whatever*. The upper part of the nest, which was characteristically open, was about two inches below the spout. I may add that usual nesting-places for the Swallow were not wanting, for Mr. Harrison took me into one of his many sheds and showed me six Swallows' nests. Four of them were placed on a beam, but curiously enough the other two were built against the inner wall of the shed, and quite a foot below the angle of the roof.—Edgar R. Waite, The Museum, Leeds, 22nd August, 1890.

NOTES—FISHES.

Three-Bearded Rockling off Whitby.—A very fine example of the Three-bearded Rockling or Gade (*Motella tricirrata*) was caught yesterday by a fisherman, on a line, about six miles off Whitby. It measures 18 inches in length and 8 inches in girth behind the pectoral fins, and is the first I remember of that size being captured off here on a hook. It has been preserved by Mr. J. H. Wilson for the Whitby Museum.—Thos. Stephenson, 1, Haggersgate, Whitby, 28th June, 1890.

Anchovy on the Coast of the North-West of England.—Although the Anchovy (*Engraulis encrasicholus*) has been obtained on many parts of the British coast, it has not hitherto been reported from the shores of the North-West of England. I am, therefore, glad to be able to record that about twenty specimens of the Anchovy were captured near Silloth, June 27th, 1890.—H. A. Macpherson, Carlisle.

BIRD-NOTES FROM THE MALHAM DISTRICT.

HARRY B. BOOTH.

In view of the approaching excursion of the Yorkshire Naturalists' Union to Malham Cove and Gordale Scar, it may not be out of place to give a few notes on the birds of that locality. I shall not attempt a local list of the avi-fauna, but give simply a few short notes made during the periodical visits of my friends and myself to that delightful and health-giving district. Of the rare and accidental visitors I shall not treat, but confine myself chiefly to those birds which any ordinary observer may find if he only visits the place at the proper season.

On entering the valley the lover of birds cannot fail to be struck with the great abundance of that beautiful bird the Yellow or Ray's Wagtail (*Motacilla rail*) ; which seems to be nearly the most common bird in the whole valley. On one occasion we noticed a nest and eggs of this species right in the centre of the moor—a rather out-of-the-way place for this species. Many pairs of the Grey Wagtail (*M. melanope*) may be seen nesting on the mountain streams which abound in this neighbourhood. Numbers of Dippers (*Cinclus aquaticus*) too, make the young river their home ; and here and there a Kingfisher (*Alcedo ispida*) may be seen as he flies before us or cuts across a field at a bend and joins the river again behind us. In summer many Sandpipers (*Tringoïdes hypoleucos*) will be seen gaily tripping along its banks ; or a Heron (*Ardea cinerea*) may rise close to us and almost leisurely wing his way to his home at Eshton Hall, about six miles away and near Gargrave. On one occasion as we passed through Airton—a small village about three miles before the tourist arrives at Malham, either from Bell Busk, Gargrave or Skipton—the quick ear of my friend, Mr. E. P. P. Butterfield, discovered the home of a pair of Pied Flycatchers (*Muscicapa atricapilla*) in a grand old ash-tree close to the low side of the village ; a species new to Upper Airedale. Before leaving Airton, I should like to mention a small pond about a mile and a half towards Gargrave and in the second field from the road. Here, on the 23rd of May of the present year, we were much surprised to find three Terns (sp.?) hawking over the water just like swallows. They were not there when we had passed the same morning. We thought they had got rather out of their line of migration. On the same pond, the Coot (*Fulica atra*) yearly breeds. If we approach stealthily we may generally have a fine view of a Heron as he stands apparently asleep in the shallow water, and the Sedge Warbler

(*Acrocephalus phragmitis*) will tell us plainly he prefers our absence to our company.

But to return to Malham. On our left, we see the stupendous block of limestone called Malham Cove, from under which the stream liberates itself after running underground from the moor. On the ledges of the steep side hundreds of Jackdaws (*Corvus monedula*) make their homes, and now and then a Stock Dove (*Columba œnas*) may be seen coming or going. A mile and a half further on and we are at Gordale Scar. A few pairs of Wheatears (*Saxicola œnanthe*) are sure to attract our attention in the ravine, while all up the sides thousands of Jackdaws make us aware of their presence; those near the top scarcely looking larger than sparrows. The bushes which grow on the ledges of the rock afford nesting-places for numbers of Ringdoves (*Columba palumbus*) and several pairs of Hawks breed on the dizzy heights of the cliffs. I have not been able to identify the species, though doubtless they are Kestrels (*Tinnunculus alaudarius*).

After some time spent in meditation at the almost overwhelming boldness of the scene, we commence a stiff climb to reach the moor above, on the skirts of which we are sure to meet with a few pairs of Ring Ouzels (*Turdus torquatus*). The weird wild notes of the Curlews (*Numenius arquata*) and Lapwings (*Vanellus vulgaris*) let us know when we are properly on the moor; and afterwards, as we move towards some marshy spot, the ever-noisy Redshank (*Totanus calidris*) will join in the chorus. In the spring-time the Snipe (*Gallinago cœlestis*) will cause us to look up and wonder how he makes his 'drumming.' But what a treat to the lover of birds are these wild moor birds' notes! What an air of freedom seems to surround us who are so much cooped up in a smoky town!

And now we come upon a small party of Dunlins (*Tringa alpina*) changing into summer plumage, either by a stream side or in a swamp. What little beauties they look! and how tame they are as they trip gaily and nimbly along just before us, and then rise with a kind of shrill whistle. A little later on and we shall see them in full summer plumage, either singly or in pairs. Doubtless, they breed here, but we have never seen their nests, although we have been in the breeding-season. But the most handsome bird on the moor is the male Golden Plover (*Charadrius pluvialis*), with his velvety jet-black breast, as he turns on a tussock to face us, and as we advance, flies, and alternates with his mate in their alarm notes. Now and then a pair of Red Grouse (*Lagopus scoticus*) or a pair of Partridges (*Perdix cinerea*) will rise before us. Long before this we shall have caught sight of Malham Tarn, a large expanse of beautiful

clear water, with Mr. Morrison's house nestling among the warm-looking woods of conifers on the far side. The Tarn cannot be very deep, as I have often watched, with my glasses, Moorhens (*Gallinula chloropus*) and Coots (*Fulica atra*) repeatedly diving, as if for food, in the centre. Occasionally a few Mallard (*Anas boschas*) will fly over head. The Tufted Duck (*Fuligula cristata*) is reported to have bred here once. If one could only see all the water birds which make this a resting-place or home during winter, what a treat it would be!

Returning again to Malham, the Wood Wren (*Phylloscopus sibilatrix*) is not uncommon in the wood at the opposite side of the valley. Here, too, in the evening, we may hear the Tawny Owl (*Syrnium aluco*) and numbers of Nightjars (*Caprimulgus europæus*). I am told by the villagers the Barn Owl (*Strix flammea*) is still there in some numbers, and the Carrion Crow (*Corvus corone*) still lingers in the district. On one occasion Mr. Butterfield saw a flock of Fieldfares (*Turdus pilaris*) here as late as May 5th.

In conclusion, I should like to state my only object in writing this paper is to let my fellow ornithologists know of the district, so that they may have the chance of enjoying it as much as I do.

NOTE—FISHES.

Sting-Ray at Whitby.—On the 12th inst., a fine example of the Sting-Ray (*Trygon pastinaca*) was caught about two miles off Whitby, by John Waters, fisherman, on a line baited with mussel. Its measurements were as follows:—from snout to root of tail, 17 inches; from root to end of tail, 16 inches; from root of tail to first spine or sting, 7 inches; distance between roots of spines or stings, 1½ inches; from root of last or second spine or sting to end of tail, 7½ inches; length of first spine, 3¾ inches; and of second or last, 3 inches. Thickness of fish from belly to back 3½ inches, width from tip to tip of wings, 20 inches; and from outside of right to outside of left eye, 4 inches. It is being preserved for the Whitby Museum.—Thos. Stephenson, 1, Haggersgate, Whitby, Aug. 15th, 1890.

LORD LILFORD'S COLOURED FIGURES OF BRITISH BIRDS.

Coloured Figures of the Birds of the British Islands. Issued by Lord Lilford, F.Z.S., &c., President of the British Ornithologists' Union. Part I, Oct. 1885, to Part XV, July 1890.

Since October 1885 fifteen parts of this most beautiful work have appeared. The size is royal octavo, and each part contains twelve plates, printed by chromo-lithography in Berlin, from drawings by J. G. Keulemans and J. Thornburn. The former of these artists has a long-established reputation for his accuracy in painting birds and their surroundings. Mr. Thornburn, although less known, evidently possesses in a high degree a real genius for depicting birds,

combined with a love of them for their own sake, and his numerous life-like illustrations in this work must alone entitle him to a place in the very front rank of our bird painters.

Of the general character of these illustrations it is impossible to speak too highly. Since the issue of Part i, not only has the standard of excellence which commenced the work been fully maintained, but in the more recent numbers considerably surpassed. Where all are good, it seems invidious to draw attention to special plates. The figures of the Kite, Grey Crow, Barnacle Goose, Golden Eye, Red-throated Pipit in Part xi; Magpie, Oyster-catcher, Peregrine Falcon (two plates), Knot (two plates) in Part xii; Twite, Avocet, Garganey, Pintail, Pochard and Tufted Ducks in Part xiii; Siskin, Barn Owl, Corncrake and Turnstone in Part xiv, are all of high artistic merit, and faithfully represent the characteristic attitudes of the birds, with charming surroundings of wild nature in their familiar haunts, and are executed by painter and lithographer alike in the very best style. The duplicate illustration of the Woodcock in Part xiv is a great improvement on that which appeared in Part vii, and which Lord Lilford states in a foot-note 'did not altogether satisfy me as representing an average specimen of the bird.' Certainly, this latter is most excellent, and nothing could be more natural and life-like.

In Part xv just received by us, we would commend to the notice of our readers plates of the Lesser Grey Shrike and Woodchat, and the Wigeon, Gadwall, and Scaup as admirable illustrations of the power and characteristic styles of the two artists.

We are glad to see that in the more recent numbers the descriptive letter-press has been considerably increased. Lord Lilford is so well known as a thorough practical naturalist that the short sketches of each species coming from his pen are certain to be well received, and they have moreover the special merit of being thoroughly original.

The price at which the illustrations are issued, 9s. 6d. a part, or an average of under 10d. for each plate, is most reasonable, and much below their intrinsic value. No doubt after completion the work will greatly rise in value. We strongly recommend all who take an interest in ornithology and have the means of indulging their hobby, to add these illustrations to their libraries. These cannot fail, now and in the future, to afford infinite satisfaction and delight, and they will certainly be a great aid to any student desirous to make himself acquainted with the appearances and plumage of those species described in the best recognised text-books of British Birds.—J.C.

Naturalist,

THE CONCHOLOGY OF MALHAM.

W. DENISON ROEBUCK, F.L.S.,
Hon. Secretary and Recorder to the Conchological Society.

THIS paper is not a record of personal experience, for I have had scarcely any in the Malham district (as the meagreness of the list of slugs will show), but simply a transcript of records which have been authenticated during the past twelve years by the referees of the Conchological Society; and it is thought the publication of them will be of interest in connection with the approaching excursion of the British Association.

The district included in the present paper is the plateau of Malham Moor, on which is situated the largest of the few lakes of which Yorkshire is able to boast, and which has a general elevation of about 1,300 ft., together with the steep escarpment (formed by the South Craven fault) which terminates it southwards, and so much of the upper valley of the Aire as extends from the escarpment to Bell Busk. This is in the main—so far as mollusca are concerned—a limestone or calcareous area, and therefore produces in profusion such species as *Helix rupestris*, *H. arbustorum*, *H. ericetorum*, *H. lapicida*, *Balea perversa*, and *Clausilia dubia*. The mollusca which inhabit the Tarn itself are worthy of remark. The altitude (1,300 ft.) is a great one at which to expect to find such species as *Limnæa stagnalis*, *Valvata piscinalis*, *Bythinia tentaculata*, *Planorbis nautileus*, *P. contortus* and *Sphærium corneum*, but the interest is increased when we find that some of these species—notably the *L. stagnalis*—are marked by white streaks in somewhat regular alternation with the horny ground colour of their shells, a phenomenon which American authors in treating of similar instances in the Rocky Mountains States ascribe to the alternations of cold and warmth to which water-shells are necessarily subjected in localities lying at so great an elevation as Malham Tarn does in comparison with the localities in lowland plains usually occupied by such species. The specimens of *Ancylus fluviatilis* which are found in the cold waters of the Aire just at the point where it issues—a full stream—from the base of Malham Cove, are also remarkable for being opaque white in colour. The marshy ground (Malham Tarn Moss) lying on the western side of the Tarn is productive of various damp-loving species.

It will be unnecessary to mention here the names of those observers to whom we are indebted for what we know of the mollusca of Malham, inasmuch as I have adopted the more satis-

factory plan of appending the names of my authorities to the various records quoted.

The total number of species here placed on record is 41, of which only three are slugs, 26 are terrestrial, and 12 fluviatile forms. To these may be added *Helix sericea*, which Rev. W. C. Hey has found at Janet's Cave. There are several species of land shells not yet on record, which may be confidently expected as a result of more extended and systematic research. No attention whatever has been paid to the slugs, the number of which will certainly be largely increased when they are sought after with any degree of attention.

Arion ater. Street Gate above Gordale, on slate rock, at 1,300 ft. alt.; W.D.R.

Limax arborum. Gordale Scar; W. Nelson.

Limax agrestis. Ascends to 1,000 ft. above Malham Cove.

Succinea putris. A common species. Road between Malham and Bell Busk; W.D.R. Common in marsh at Airton, close to river; W. West. Gordale Head, at 1,300 ft. alt., incrusted specimens; W. West. Malham Tarn Moss, alt. 1,300 ft.; W. West.

The var. *limnoidea* has been found at Malham; W. West.

Succinea elegans. Has been once obtained. Malham, at 1,300 ft. alt.; W. West.

Vitrina pellucida. Has only once been recorded, though it is doubtless common. Malham, on limestone; W. West.

Zonites cellarius. Not uncommon. Kirkby Malham; W. Nelson. Malham; W. West. Gordale Beck; W. West.

Zonites alliarius. A common species. Kirkby Malham; W. Nelson. Malham; W. West. Hanlith; W. West. Street Gate, Gordale Beck, on Silurian rocks, at 1,300 ft. alt.; W.D.R.

Zonites glaber. One record. Gordale Scar; W. C. Hey.

Zonites purus. Malham; W. West. Base of Gordale Scar; W. West.

Zonites radiatulus. On Malham Tarn Moss, at 1,300 ft. alt., amongst *Encalypta* and other mosses; W. West.

Zonites crystallinus. A commonly-occurring species. Malham; W. West. Rock-crevices above Malham Cove; W. West. Near Malham Tarn, at 1,300 ft. alt.; W. West. Street Gate, above Gordale, on Silurian rocks, at 1,300 ft. alt.; J. D. Butterell and W.D.R. Close under Gordale Scar; W. West.

Helix nemoralis. Not uncommon. Gordale Scar; W. Nelson. Kirkby Malham; W. Nelson. Common at Malham, *libellula* 00000 and 12345; W. West.

Helix hortensis. Malham, var. *lutea* 00000 and 10345; W. West.

Helix arbustorum. An abundant and variable species. Airton; W. Nelson. Gordale Scar; W. Nelson. Common at Malham; W. West. Common at Bell Busk; J. W. Taylor.

The var. *alpestris* occurs at Malham, with type and var. *pallida*; W. West.

The var. *flavescens* is not uncommon. Malham; W. West. Airton; W. Nelson.

The var. *pallida* is also not uncommon. Malham; W. West. Foot of Gordale Scar; W.D.R.

The var. *marmorata* is common at Malham; W. West.

The var. *canigonensis* has occurred once. Bell Busk; J. Madison.

Helix rufescens. Common at Malham; W. West. Above Malham Cove, at 1,300 ft. alt.; W. West. Kirkby Malham; W. Nelson. Bell Busk; W.D.R.

The var. *rubens* has occurred at Malham, with type; W. West.

Helix hispida. Common at Malham; W. West. Gordale; W. West. Near Malham Tarn, at 1,300 ft. alt.; W. West.

Helix ericetorum. Malham; W. Nelson. Malham Cove; J. W. Taylor. Airton; W. Nelson.

Helix rotundata. An abundant species. Airton; W.D.R. Common at Malham; W. West. Kirkby Malham; W. Nelson. Common at Janet's Cave; W.D.R. Common close to Malham Tarn House, at 1,300 ft. alt.; W.D.R.

Helix rupestris. Occurs on limestone rocks and walls in great profusion. Kirkby Malham; W. Nelson. Common on limestone rocks at Malham; W. West. Above Malham Cove, at 1,300 ft. alt.; W. West. Janet's Cave, abundant on limestone walls; W.D.R. Airton, abundant; W.D.R. Common on walls near Bell Busk; W.D.R. Gordale, at 1,000 ft., common; W. West. Common close to Malham Tarn House; W.D.R.

Helix lapicida. An abundant species. Near Gordale Scar; W. Nelson. Common at Malham; W. West. Hanlith; W. West.

The var. *nigrescens* has once occurred at Malham; W. West.

Bulimus obscurus. Gordale Scar; W. Nelson.

Pupa umbilicata. An abundant species. Common at Malham, on limestone rocks; W. West. Close to Malham Tarn House, alt. 1,300 ft.; W.D.R. Gordale Scar; W. Nelson. Kirkby Malham; W. Nelson. Airton; W.D.R. Bell Busk; W.D.R.

Pupa marginata. Limestone rocks at Malham; W. West.

Vertigo pusilla. Malham; W. West.

Balea perversa. Occurs on walls in great profusion. Malham; W. West and T. Rogers. Janet's Cave near Malham; W.D.R.

Clausilia rugosa. A well-distributed and abundant species. Common at Bell Busk; W.D.R. Kirkby Malham; W. Nelson. Hanlith; W. West. Abundant on limestone rocks at Malham; W. West. Above Malham Cove; W. West. Gordale, at 1,000 ft. alt.; W. West. Street Gate, Gordale Beck, on Silurian rocks, alt. 1,300 ft.; W.D.R.

Clausilia dubia var. **suttoni** Wstld. is very abundant. Gordale Scar; W. Nelson. Abundant on limestone rocks at Malham; W. West. Janet's Cave; W.D.R. Abundant close to Malham Tarn House; W.D.R. On old walls, Malham Moor; E. Collier.

Azeca tridens. Malham; W. West. Malham Cove; E. Collier.

Zua lubrica. Malham; W. West.

Bythinia tentaculata. A few in Malham Tarn; J. D. Butterell and W.D.R.

Valvata piscinalis. Malham Tarn, approaching var. *acuminata*; J. D. Butterell and W.D.R.

Planobis nautileus. One found in Malham Tarn; W.D.R.

Planorbis spirorbis. Common in Malham Tarn Moss at 1,300 ft. alt.; W. West.

Planorbis contortus. Abundant, but small, in Malham Tarn; W.D.R. and J. D. Butterell.

Limnæa peregra. Common. Malham; W. West. Malham Tarn Moss; W. West and E. Collier. Malham Tarn; W.D.R. Airton; W. Nelson.

The var. *ovata* occurs in Malham Tarn; J. D. Butterell and W.D.R. River Aire at Malham Cove; W.D.R.

The var. *acuminata* has been found at Malham, but not characteristic; W. West. This form is very peculiar; Dr. E. von Martens has referred it to *L. lagotis* Kob.

Limnæa stagnalis var. **fragilis-variegata.** Abundant on *Potamogeton lucens* in Malham Tarn; J. D. Butterell and W.D.R.

Limnæa truncatula. Malham; W. West. Common on Malham Tarn Moss, at 1,300 ft. alt.; W. West.

Ancylus fluviatilis. Malham; W. West. Common in the Aire at its issue from Malham Cove; W. West.

The var. *capuloides* has been found. Malham; E. Collier. Malham Cove; T. Rogers.

The var. *albida* is common in the river Aire just where it issues from Malham Cove; W. C. Hey.

Sphærium corneum var. **nucleus.** Dead specimens abundant in Malham Tarn in Sept. 1883; J. D. Butterell and W.D.R. Mr. Butterell remarked that the dead shells were peculiar in shape, and having the young fry very noticeable at the umbones somewhat after the manner of *S. lacustre*, and that living specimens should be procured, as he is inclined to believe that perfect examples will in some cases show the same alternation of white bands with the ground colour as the *L. stagnalis* var. *fragilis*. The specimens obtained were also slightly inequilateral and very tumid.

Pisidium pusillum. Common in Malham Tarn Moss; W. West. Common in Malham Tarn; W.D.R.

Pisidium fontinale. Malham; W. West.

NOTES—LEPIDOPTERA.

Phoxopteryx siculana in Yorkshire.—When collecting on Askham Bogs near York, in company with Mr. G. C. Dennis, on May 31st last, Mr. Dennis netted and handed to me a Tortrix, which turned out to be a good specimen of *Phoxopteryx siculana*, a species new to the county of Yorkshire. Previously I had only taken this species in Wicken Fen in Cambridgeshire, ground which in many respects is very similar to Askham Bogs.—GEO. T. PORRITT, Huddersfield, August 7th, 1890.

Apatura iris L.—This butterfly has been discovered at Welton Wood in the parish of Welton-le-Marsh, near Alford, by Edward Woodthorpe, who there took a fine male on the 25th July last and saw three others. He has to-day shown me his capture.—JAS. EARDLEY MASON. The Sycamores, Alford, 5th August, 1890.

NOTE—COLEOPTERA.

Dorcus parallelopipedus near Doncaster.—A few days ago, while looking through a miscellaneous collection of insects formed by Mr. Black of this town, I noticed one specimen of this insect, and on inquiring about it, was informed that it was taken a little outside the town two years ago, and that another of our townsmen, Mr. Pattison, had taken more. On following up the matter more closely by seeing that gentleman, I was shown four other specimens, one of which had been taken on the 9th of this month. In each case the insect had been attracted by sugar. Mr. Pattison tells me that he has only met with one per season, and all, including Mr. Black's specimen, were from the same locality. As the Rev. Canon Fowler (British Coleoptera) makes the remark that it has not been recorded further north than Church Stretton, Cheshire, this should be of interest to our Yorkshire coleopterists. It may be that an extended examination of Mr. Pattison's collection might lead to several other records of new species to this locality if not to the county itself.—E. G. BAYFORD, 24, Cambridge Street, Doncaster, August 11th, 1890.

BACKHOUSE'S HANDBOOK OF EUROPEAN BIRDS.

A Handbook of European Birds, for the Use of Field Naturalists and Collectors. By JAS. BACKHOUSE, JUN., F.Z.S., Etc. Gurney & Jackson.

Mr. Backhouse has given naturalists and collectors a handy volume of reference, descriptive of European birds. His handbook is, however, essentially one to be used by those who have acquired

ept. 1890.

some previous knowledge of the subject, and to those who are so fortunate as to possess this knowledge it should be found a useful pocket companion, enabling them to distinguish any species of European bird with comparative ease and certainty, and saving the necessity of carrying about from place to place a whole library of ornithological literature. We have often enough ourselves felt the want of a thoroughly reliable and handy guide to enable us to determine in some fresh-killed example or dry skin those slight and often obscure points which mark the specific differences between one bird and another, and every practical ornithologist is aware how hard it is to retain in the memory all these minute details so as to have them ready for use when required. Mr. Backhouse has, in some degree, solved the difficulty, and thereby earned the thanks of his brethren.

We are well aware that this small octavo volume of 334 pages, the work of years, must have cost our author much time and labour, for not only has he consulted all the best modern authorities, he has also, at great trouble to himself, gone carefully through many of the finest collections in the kingdom, and by an examination of the skins been able to verify and correct his notes. Each species has been treated separately, with a concise description of the plumage of the adults in summer and winter and the young, special and characteristic features being given in italics. A few lines are also given to the distribution, also the more common haunts, of each. We are far from saying that this little book is complete, or altogether without faults; from the very nature of the work this can scarcely be expected, and the author admits as much in his preface. In some cases we think his differentiations are not sufficiently clear, and in a few he appears to have overlooked the most obvious points of distinction between closely allied forms. Perhaps the paragraph on distribution and the habitat, as Mr. Backhouse terms it, had better have been omitted altogether; as they stand at present they can be of little use either to the practical ornithologist or the young student, and might occasionally be absolutely misleading.

In the Appendix a list of North American birds is given which are stated to have occurred in Europe, and a second list of purely African species which have also been recognised. For the convenience of those unacquainted with technical terms a frontispiece has been introduced, illustrating the outlines of a bird, and showing the names of the various parts.

In conclusion, we sincerely congratulate Mr. Backhouse on the completion of his work, and his painstaking attempt to supply a long-felt want of his fellow workers.—J.C.

Naturalist,

THE YORKSHIRE NATURALISTS' UNION AT KILDALE-IN-CLEVELAND.

The members of the Yorkshire Naturalists' Union visited Kildale on Saturday, the 12th July, and were fortunate in various respects. The weather, which was decidedly moist in most parts of Yorkshire, was quite fine, though with an overcast sky, in the region which the Union engaged in investigating. The arrangements—thanks to the local knowledge of the members of the Cleveland Naturalists' Club—were singularly complete, and carried out as planned, while the results at the close of the day were decidedly above the average. The attendance was about an average one—about forty or fifty being on the ground during the day—although at the tea and meetings there were not so many as usual, a number of members having to leave by early trains.

The district which had been selected for examination included the valley of the Leven from Kildale downwards to Battersby and Ayton, the moors overlooking it, and for geologists the whinstone dyke at the foot of Roseberry Topping. Three parties were arranged, all starting from Kildale Railway Station.

The first party consisted of conchologists and botanists, under the leadership of Mr. Baker Hudson, M.C.S., of Middlesbrough, and had a very easy task, their line of route not extending to more than a couple of miles, and lying entirely in the picturesque woodlands which skirt the course of the Leven. Their work, too, was taken easily, and at one point a small damp hollow full of leaf mould and dead leaves proved most attractive and productive. Here *Pupa ringens* (new to Kildale) was found commonly in the dampest portions of the hollow, and *Helix lamellata* was equally common on leaves in the drier portions.

The second party consisted of geologists, under the leadership of Dr. W. Y. Veitch, of Middlesbrough, and Rev. John Hawell, M.A., Vicar of Ingleby Greenhow, and was perhaps the most numerously attended of the three. They first proceeded to examine the spoil-heaps near Kildale Station, then followed the line of route of the first party as far as the disused Bleach Mill. Here they diverged, striking up the wood to Easby Moor, thence by the monument erected in memory of Capt. Cook, who was born not many miles away, to the whinstone quarries near Roseberry Topping, and thence to Ayton Station.

The third party consisted of entomologists, under the leadership of Mr. T. A. Lofthouse, accompanied by Mr. John Gardner. They were with the second party for some distance, diverging at Easby

Moor, and proceeding to the examination of Easby Wood, where—as will be seen below—they met with a considerable and gratifying degree of success.

All the parties returned to Middlesbrough, where, at the Station Dining Rooms, they sat down to a well-served and thoroughly-enjoyed meat tea. Sectional meetings were dispensed with, the results having already been ascertained and reports prepared by the sectional representatives.

In the absence of the President and all the Vice-Presidents, Dr. Veitch, the President of the Cleveland Naturalists' Club, was voted to the chair. The minutes having been read and passed, the following candidates were unanimously elected as members of the Union:—Mr. J. Cæsar Bacon, Santon, Isle of Man; Mr. John Machell Foster, Pickering; Mr. J. W. Procter, York; Mr. J. Raine, Richmond; Mr. Thos. Spencer, Richmond; and Mr. W. H. Thomas, Middlesbrough. The newly-founded Ravensthorpe Naturalists' Society (120 members) was elected into the Union. The roll-call showed that eleven Societies were represented by the members present during the day, viz.:—Cleveland, Heckmondwike, Hull Geological, Hull Field Naturalists, Leeds (all three societies), Liversedge, Sheffield, Malton, and York.

The thanks of the Union were then voted, on the proposition of the Rev. Wm. Spiers, M.A., F.G.S., of Hull, seconded by Mr. Robert Cook, of York, to Lady De L'Isle and Dudley, Mr. James Emerson, and Mr. R. B. Turton for permission for members to visit their estates, to Mr. W. Winn for similar permission in respect of his whinstone quarries; to Rev. John Hawell, Dr. Veitch, Mr. B. Hudson, and Mr. T. A. Lofthouse, for their services as conductors of parties, and to Messrs. R. Lofthouse and Thos. F. Ward for their contributions to the excursion programme. Mr. Hawell replied.

The reports of the Sections were then presented.

For the Vertebrate Section, in the absence of all its officers, Mr. Thomas H. Nelson, M.B.O.U., of Redcar, reported that observations had been made by Mr. Clayton, Mr. T. A. Lofthouse and himself, but that the list of birds seen was not a large one, probably from the day not being very favourable for observation. The following were noted:—

Missel Thrush.
Song Thrush.
Blackbird.
Ring Ouzel.
Redstart.
Redbreast.
Whitethroat.
Chiffchaff.
Willow Warbler.
Hedge Accentor.
Common House Sparrow.
Wren.
Pied Wagtail.
Meadow Pipit.

Swallow.
House Martin.
Sand Martin.
Swift.
Greenfinch.
Chaffinch.
Bullfinch.
Starling.
Rook.
Ring Dove.
Kingfisher.
Green Woodpecker.

Mr. Nelson added a few interesting remarks on the zoology of the district. Mr. E. B. Emerson had noticed at Easby, his father's residence, the Great Spotted, Lesser Spotted and Green Woodpeckers, Wryneck, Tree Creeper, Long Tailed Tit, Heron, Common Sandpiper, Spotted Crake, and Great Snipe. The Rough-legged and Common Buzzards have occurred several times at Ingleby, and as lately as November last a Peregrine Falcon was killed there. He also remarked that he had a letter from Mr. E. B. Emerson, J.P., of Tollesby Hall, near Middlesbrough, dated the 11th July, in which he informed Mr. Nelson that a Nightingale (*Daulias luscinia*) had frequently been heard singing in the grounds there. Mr. Emerson has often heard the Nightingale in the South of England, and is not likely to be mistaken. If this record is correct, it shows that the range of this bird is steadily spreading northward; it occurs regularly at Harrogate, and there appears to be no reason why it should not be heard in Cleveland.

The Badgers which have from time to time been reported from Ingleby are, doubtless, to be traced from Hutton Woods, where Sir J. Pease turned out several some years since.

An animal, supposed to be a hybrid between a Hare and a Rabbit, was shot at Easby a few years ago, and is now in the collection at Tollesby. It has the characteristic features of both animals, and if not a hybrid, then it is hard to say what it is.

For the Conchological Section, in the absence of all its officers, the report was drawn up by Mr. Baker Hudson, M.C.S., of Middlesbrough, who had acted as leader of one of the parties during the day, and who had been assisted in collecting by Mr. W. W. Reeves, Mr. W. Denison Roebuck, F.L.S., Mr. T. A. Lofthouse, Rev. John Hawell, and other members. Mr. Hudson being unable to stay to the meeting, the report was given on his behalf by Mr. Roebuck, who stated that the day's work had been very successful, a most interesting species—*Pupa ringens*—having been added to the previously-ascertained Kildale list. The main attention of the conchologists was given to the land shells of Kildale Wood, no water shells having been found, or even searched for. The list is as follows:—

Arion ater.
Arion hortensis.
Arion bourguignati.
Limax agrestis.
Limax maximus.
Limax arborum.

Vitrina pellucida.
Zonites cellarius.
Zonites alliarius.
Zonites nitidulus.
Zonites purus and
Var. margaritacea.
Zonites crystallinus.
Zonites fulvus.
Helix lamellata.
Helix nemoralis.
Helix arbustorum.
Helix sericea.
Helix fusca.
Helix rotundata.
Helix pygmæa.
Pupa umbilicata.
Pupa ringens.
Vertigo edentula.
Clausilia rugosa.
Clausilia laminata.
Zua lubrica.
Azeca tridens.
Carychium minimum.

Mr. Hudson had occupied an hour or two previous to the arrival of his party by collecting the following species at Ingleby Greenhow, those marked * being additional to the Kildale list :—

*Helix aspersa.
Helix rotundata.
Clausilia rugosa.
*Bulimus obscurus.
Zonites alliarius.
Zonites nitidulus.
Zonites crystallinus.
Arion hortensis.
*Arion subfuscus.
Limax maximus.

This makes a total of 31 species, 28 of which were found in Kildale Wood. Mr. Roebuck concluded by congratulating the Rev. J. Hawell on his good fortune in finding a few days before the excursion a young specimen of the great rarity, *Limax cinereo-niger*, in Easby Wood.

For the Entomological Section, in the absence of all its officers, Mr. John Gardner, of Hartlepool, reported that owing to the want of sunshine only two species of Butterflies were observed, viz., *Satyrus janira* and *Cœnonympha pamphilus*, but by beating trees and shrubs the following were secured :—

Eupisteria heparata.
Asthena luteata.
Asthena candidata.
Emmelesia alchemillata.
Larentia didymata.
Larentia pectinitaria.
Lomaspilis marginata.
Acidalia aversata.
Tanagra chærophyllata.
Hypena proboscidalis.
Eudorea conspicualis.
Eudorea ambigualis.

besides other geometers of almost universal occurrence. Of Micro-Lepidoptera were obtained :—

Œcophora stipella.
Gracilaria syringella.
Argyresthia gœdartella.
Argyresthia sorbiella.
Argyresthia nitidella.
Pepilla curtisella.
Bactra lanceolana.
Tortrix viridana.
Tortrix heparana.
Coleophora cespititiella.
Dasycera oliviella.

this last-named beautiful insect being new to the Yorkshire list. The moors were not visited or doubtless other species would have been taken. The district generally is undoubtedly rich in good species, the late Mr. T. Meldrum, of Ripon, having taken between Ayton

and Stokesley *Cerura bicuspis*, *Trichiura crataegi* and *Cleora lichenaria*, and it would be desirable to again visit this district the first or second week in June. Mr. M. Lawson Thompson, of Saltburn, recorded the following beetles taken upon Roseberry Topping.

Bradycellus similis.
Calathus melanocephalus.
Calathus flavipes.
Olisthopus rotundatus.
Nebria gyllenhalii.
Quedius molochinus.
Notiophilus biguttatus.
Notiophilus aquaticus.
Otiorhynchus ovatus.

For the Botanical Section, Mr. M. B. Slater, F.L.S., of Malton, its Secretary, reported that the finely-wooded dell through which the Leven stream runs at Kildale afforded good ground for the botanists. Upwards of one hundred species of flowering plants were noted as seen on the route, many of them, however, of general distribution in the north of England, and the greater portion of the plants were seen that are named in the circular. The most interesting plant met with was *Agrimonia odorata* Mill., a tuft of which was found growing by the side of the woodland path near to the old Bleach Mill. This plant is an addition to the North Yorkshire Flora, and so far as he was aware has not been previously recorded. It was detected and pointed out to the members of the party by Mr. Walter W. Reeves, of London, who has a very good knowledge of the flowering plants of the British Islands. Mr. Reeves was on a visit in Yorkshire at the time and joined the excursion party, and kindly gave valuable aid to some of the younger botanical members by naming their various gatherings. On dripping rocks by the stream side and in the shady parts of the wood, mosses and hepatics were seen in some abundance. If the dale could be more carefully explored for this tribe of plants, during the spring and autumn months, which are the best seasons for gathering them, probably some interesting species of the rarer mosses and hepatics would be obtained. Upwards of thirty species of mosses were gathered, but the greater portion at this season in the lowland locality not having good fruiting capsules on them, only the most commonly distributed species were recognised. Amongst the gatherings were some patches of *Bryum capillare* L. in fine fruit, also a tuft of *Barbula cylindrica* Tayl. with fruiting capsules, a moss not often found in that state. On wet stones by the stream side some masses of *Dichodontium flavescens* Dicks. was growing, sterile however, as its fruiting season is October and November. In Hepatics, *Nardia obovata* Nees and *Cephalozia lammersiana* Hüb. were growing in considerable masses on dripping rocks by the banks of the stream. *Jungermania riparia* Tayl. and *Jung. gracillima* Sm. on damp ground in shady places. *Frullania dilatata* L. was seen on the bark of

several of the trees. *Cephalozia catenulata* var. *pallida* Spruce has also been gathered on Easby Moor by Mr. R. Barnes of Saltburn.

The Geological Section, in the absence of all its officers, was under the leadership of Dr. W. Y. Veitch, of Middlesbrough, and the Rev. John Hawell, M.A., Vicar of Ingleby-Greenhow, the latter of whom furnishes the following report:—Leaving Kildale Station, the party first proceeded to examine the peat bed revealed by the railway-section a little to the south. Owing, however, to the care with which the railway company's servants level up all inequalities of the bank, no very satisfactory exposure presented itself for observation, though the position and character of the bed were seen. Similar deposits occur in the vicinity of Middlesbrough and of Hartlepool, and from it at Kildale have been taken the horns of the Red-deer (*Cervus elaphus*) and the Reindeer (*C. tarandus*). An investigation was next made of a large deposit of rubbish thrown out near the site of the ironstone workings near Kildale. As it is now many years since the works here were in operation, the ejected débris was found to be much weathered, and such fossils as had not suffered from the weathering process were readily extracted. It was at once evident that the rubbish was from the Mid-Liassic zone of Am. spinatus, the fossils obtained including such characteristic forms as *Am. spinatus*, *Pecten æquivalvis*, *Monotis inæquivalvis*, *Limea acuticosta*, *Rhynchonella tetrahedra*, *Terebratula punctata*, *Belemnites breviformis*, *Ostrea submargaritacea*, and *Chordophyllites cicatricosus*. Fragments of wood were also observed in considerable abundance. The 'Cleveland Main Seam' of Liassic Ironstone, which at Upleatham, only a few miles away, has an undivided thickness of 13 ft., has unfortunately here dwindled down to a thickness of only 5 ft. 4 in., and even this includes an inter-bedded band of shale measuring about 1 ft. 3 in. Still, there are compensations everywhere, and wandering over this 'land whose stones are iron,' one may reflect that, had the seam at this place been richer, what one of the historians of Cleveland has ventured to call 'Sweet Auburn, loveliest village of the plain,' might have become a Zarephath, a 'place of furnaces.'

Proceeding down the Kildale Wood, lower beds of the Middle Lias were seen coming into view. The hardness of the Margaritatus Sandstone has given origin to a small waterfall. The falling of the Leven over the ridge at this point is productive of effects, which, on a quiet summer's day, are highly pleasing to ear and eye. Just at the entrance to the wood was passed the dam of an artificial lake, which formerly ornamented the grounds of Kildale Hall. Another lake

existed further up the stream. Several years ago the dam of the upper lake having burst, the water entered the lower lake with so much force that the embankment of that also gave way, and the effect of the downrush of the combined contents of the two lakes may be readily imagined.

Having ascended the hill to the right, the party made their way along the slopes of the hill upon which Captain Cook's monument stands. From here an extensive view was obtained, and one most interesting and instructive to the 'geological eye.' A little below there was a prominent encircling ridge formed by the hard bands of the margaritatus-zone. On the higher ground above them a second conspicuous ridge, due in like manner to the resisting power of the hard sandstone of the Inferior Oolite. This latter ridge might be traced as an escarpment right round the valley to the left, and from its various appearances the instructed eye might learn much as to the amount of change which had occurred since glaciers brought their ponderous burdens, and swept others hence. Here and there on the lower ground might be discerned hummocks of sand and gravel, due to the Middle Glacial epoch; while running round the hill-sides at a moderate elevation was to be seen a conspicuous line of mounds of rubbish mined from the zone of *Ammonites serpentinus* in the search for jet, in the days when an unjust system of trade had not caused 'real Whitby Jet" to be superseded by 'Frenchy,' and all but extinguished an interesting Cleveland mining industry. Far away in the distance might be discerned the hills near Richmond.

Passing through the hamlet of Langbargh, ascent was made in the direction of Roseberry Topping, and Airey Holm was reached, where the young Captain Cook once lived in his father's house. The place has been identified with the ancient Hergum, which in turn took its name from the horg, or blot-stèn, or sacrificial open-air altar made use of in the worship of Odin, the all-father. The old name of Roseberry was Odinsberg, and how this name came to be superseded by the modern one, and what the first element of the modern name signifies, are problems which historians and philologists do not yet appear to be able satisfactorily to solve.

The party of nature-worshippers (more intelligent than they of old it may be) who visited the place on the 12th of July, did not observe the blot-stèn of old Odin, but they observed certain bits of rounded rock which had been pushed into the locality by the long arms of the powerful ice-king who ruled here before Odin's time, and carved him out his throne. These bits of rock had evidently been

well tumbled about by the old monarch: they had been put through a civilising process until all their corners were rubbed off and they had gained much polish. Portions of old lava were there—rocks melted in the fell chaldron of a monarch who ruled long ages before him of the ice and long arms, and who, judging from the known characteristics of the two, could not well have been his ancestor, that is if the 'principle of heredity' applied in those remote ages. He belonged to the period of the Lower Old Red and ruled in the region of the Cheviot hills.

A little further up another heap of spinatus-rubbish was inspected, containing most of the fossils observed at Kildale, the principal additional one being *Lima hermanni*. On the return to Great Ayton station a visit was paid to the 'Whinstone' quarries in its vicinity. This stone is very extensively used for road-making. It has been well described as 'a bluish-grey augite-andesite, consisting of a ground mass apparently made up of augitic and felsitic matter, with small crystals of felspar and augite. Scattered through this are glassy crystals of triclinic felspar of much larger size, very distinctly visible to the unaided eye, and which give the rock a distinctive character by which it can be easily recognised.' The 'Cleveland Dyke' which is thus being carved up to be trodden underfoot extends from near Whitby to the neighbourhood of Armathwaite in Cumberland.

A vote of thanks to Dr. Veitch for presiding, which was proposed by Mr. J. M. Meek of Redcar, seconded by Mr. Thomas F. Ward of Middlesbrough, and cordially adopted, brought to a close one of the most enjoyable and successful days the Union has had for some time.—W.D.R.

NOTE—BOTANY.

Senecio viscosus L. at Savile Town near Dewsbury.—As there are very few records of this uncommon species of *Senecio* in West Yorkshire, I am pleased to be able to report an additional one. On July 30th I saw about a score plants, varying in size from 6 in. to 18 in., on a hedgebank at the foot of the railway embankment at Savile Town. They occurred not *on* the rail-bank, but on the dry grassy meadow side of the hedge, which was bordered by a ditch—not a bad place for the development of plant life. The range of distribution of *S. viscosus*, as given in 'The Student's Flora,' is from Banff and Dumbarton to Kent and Sussex; Wales (not in W. or Midland Counties); and rare in Ireland. It is very local, too, yet I think this must only be considered as casual where I discovered it. The author, at p. 291, of 'The Flora of West Yorkshire' (who has seen my plant and confirmed its name) states that *S. viscosus* is often misnamed or confounded with robust *S. sylvaticus*. There is no mistake of name in this instance, however, the whole plant being viscid or 'clammy,' as old writers put it, very fœtid, and the flower heads few, campanulate and erect, with revolute ray florets. The census number in the 8th edition of the Lond. Cat. is as low as 28, therefore it is a plant worth a passing notice, and is a good addition to our local flora.—P. Fox Lee, Dewsbury, 12th August, 1890.

Naturalist,

THE TREE-SPARROW IN THE COUNTY OF DURHAM.

J. W. FAWCETT,
The Grange, Satley.

In the February number of 'The Naturalist,' Mr. Whitlock contributed some notes on the Tree-Sparrow in Nottinghamshire, which was followed, in the March number, by an article from the Rev. H. A. Macpherson on the Tree-Sparrow in the Lake District, and perhaps it may not be out of place if I follow with some brief notes on the same bird in the county of Durham.

The Tree-Sparrow in the county of Durham is a local resident, i.e., it is found in certain localities all the year round, and being a shy bird it is not so much noticed as its better known congener and relative. The bird nests early, sometimes in February or March, and generally rears two broods in the season, the second being in June and July. The nest resembles that of the House Sparrow, only instead of straw it has often withered grass. The eggs, in some cases smaller than those of its relative, range from four to six, though I have frequently known as many as seven and eight, five being the average. The nesting-places of this bird which I have come across are as follows:—in holes of decayed trees, holes in walls, under the coping-stones of farm-buildings and garden walls, in hedges, bushes, between trunks of trees and the ivy clinging to them, in forks of branches, and amongst the branches. The trees have been generally pollard willows, to which it is especially partial, planes, oaks, larch and scotch firs, and the bushes, thorns and woodbines. In the summers of 1880, 1881, and 1882, a colony of these birds took up their nesting-places in close proximity to the farmstead of Baxter Wood, in the Browney valley, about a mile and a half from the city of Durham, where the House Sparrow was very common. From almost constant observations which I made during the breeding season—June, July—I found that the two species inter-paired, but, unfortunately, I am not able to say whether they reared any young, as the trees were near a public foot-path, and the nests were much disturbed, being totally robbed of their contents at various times. In every case of the inter-pairing it was a male Tree-Sparrow with a female House Sparrow.

Some of the situations of the colonies where these birds locate themselves in this county are as follows:—in the city and neigh-

bourhood of Durham in trees and old walls; in old walls near Whitburn; in trees and walls near Wolsingham; in similar situations in the Browney valley and also in the lower part of the Derwent Valley.

Numbers of this bird are only spring and autumn visitants to this county, arriving here about the latter part of March and beginning of April and leaving again in September and October, or even later, flocking with Linnets, Greenfinches, Stone Chats, &c. Others stay the winter when they are gregarious, and may often be seen around corn-stacks and about farmyards feeding with their more intrusive relatives, the House Sparrow, Linnets, Blue Titmice, Robins, &c.

NOTE—ORNITHOLOGY.

'**The Mealy Redpoll in Oxon?**—I confess that on reading Mr. Eagle Clarke's little notice of the 'Birds of Oxon,' I am immensely amused at his discovering that Mr. Aplin, and those of us who worked *for him* for years in that county, mistook Mealy Redpolls for large examples of *Linota rufescens*. As I, if any one, am the chief culprit, Mr. Clarke will no doubt allow me to answer for myself. I have no hesitation in saying that the birds were *not L. linaria*, but simply large examples of the Lesser Redpoll, and lighter coloured than most of the tawny little Redpolls caught in England. I may say that I have examined *many hundreds*; at one time I used to regularly visit the bird shops in Club Row, Shoreditch, and these birds were caught sometimes in such numbers that I have known them retailed at 1s. 6d. a dozen, and even sold as a 'penny bird' to the street urchins. I have also seen 'droves' of Mealy Redpolls in Norway, most captivating and confiding little birds; the newly-fledged 'branchers' permitting a very close approach. At night they used to roost in the willow-scrub. I have also kept many Lesser and Mealy Redpolls in confinement, and have paid considerable attention to the nesting of the Lesser Redpoll in the North of England. Both the large form and the small form of the Lesser Redpoll breed with us in Cumberland, and their call-notes and habits are precisely similar, but the typical British Redpoll is, of course, the little tawny fellow, the male of which sometimes breeds before he has acquired the red breast; the other form being the scarcer bird. I hope that after this Mr. Clarke will give us credit for knowing the two species apart, because to one who has handled as many Redpolls as I have, his suggestion is too diverting. There are two forms of Goldfinches, a light form and a small dark one, and the difference between the two forms of Redpolls is to my eye just as well marked. I do not, myself, believe in hair-splitting; I prefer much to 'lump' local races together; but *L. linaria* is a well-defined species, with a different call-note from *L. rufescens*.—H. A. Macpherson, Carlisle, May 1st, 1890.

[The facts which have called for the above note are simple. I ventured to consider certain Redpolls described as 'the large light-coloured race of Redpolls,' and which occurred in Oxfordshire 'in the winters of 1879-80 and 1880-1,' to be *L. linaria*. Mr. Macpherson tells us they were simply a form of *L. rufescens*. The exposition of his views suggest the question of the expediency of recognising a form of *L. rufescens* to be familiarly alluded to as 'the large light-coloured race.' The historians of our British birds would appear to think otherwise, since they do not mention it. If we admit that there is a 'large light-coloured race' of *L. rufescens*, worthy the name, we would ask where does *L. rufescens* end and *L. linaria* begin? For the distinction between the two birds is admittedly one of size and colour. Mr. Sharpe and Mr. Seebohm, among British ornithologists, regard *L. rufescens* to be a sub-species only of *L. linaria*. Can another split be recognised without trespass upon the border-lands of individualism? Mr. Macpherson really must pardon us if, after his expressed opinions on this subject, he is regarded as anything but a 'lumper' on the subject of Redpolls.—W.E.C.]

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Papers and records published with respect to the Natural History and Physical Features of the North of England.

LEPIDOPTERA, 1888.

THE present instalment includes not only the titles for 1888, but also a considerable number for earlier years, including all papers which have appeared in 'The Naturalist' itself during the years 1884 to 1887 inclusive, and the publication of which makes the Bibliography now a complete record of what lepidopterists have done in the North of England during a space of five years.

The previous instalments of the Bibliography of Lepidoptera were published as follows:—For 1884, in Nat. for July 1885, pp. 285-292; and for 1885, 1886, and 1887, in Nat. for Feb. and March 1888, pp. 58-78.

The present instalment includes a number of titles contributed by Mr. T. D. A. Cockerell, to whom the editors have been considerably indebted for assistance of this kind.

The counties for which this bibliographic record is made are Cheviotland, South Northumberland, Durham, Yorkshire (N.W., N.E., S.E., Mid W., and S.W.), Lincolnshire (N. and S.), Notts., Derbyshire, Cheshire, Lancashire (S. and W.), Westmorland with Furness, Cumberland, and Isle of Man.

ANON. [Editor of Naturalist]. **Yorkshire, Lancashire.**

[Comparison of the Yorkshire and Lancashire lists of butterflies; parallelism noted]. Nat., March 1885, p. 183.

ANON. [not signed]. **York S.E.**

The Yorkshire Naturalists' Union at Pocklington [24th June, 1885; *Abraxas grossulariata* (larvæ) and *Hydrocampa stagnalis* noted]. Nat., Aug. 1885, p. 308.

ANON. [not signed]. **York S.E.**

[Notes made by Hull Field Naturalists in 1885; re-occurrence of *Hadena occulta*, and capture of *Sphinx convolvuli*]. Nat., Feb. 1886, p. 63.

ANON. [not signed]. **Yorkshire.**

Ackworth Reports.—Natural History Society [a 'Kitten Moth'—which?—caught at Primrose Vale near Ackworth]. Nat. Hist. Journ., Sep. 15th, 1887, xi. 128.

ANON. [signed 'R.B.L.']. **Westmorland.**

Convolvulus Hawk-moth [*Sphinx convolvuli*] **in Westmorland** [at Kendal a 'fortnight ago']. Field, Sep. 17th, 1887, p. 478.

ANON. [not signed]. **'White Hill.'**

List of . . Donations to the Museum . . of the Natural History Society [of Newcastle-on-Tyne], from June, 1877, to August, 1887 [1880, Death's-head Moth (*Acherontia atropos*), taken at White Hill (H. S. Carr)]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 9, part 2 (1888), p. 286.

ANON. [signed S.D.C. (Northallerton)]. **York N.W. and N.E.**

Hybernating Butterflies [near Northallerton; a great many *Vanessa cardui* and some few *V. atalanta*]. Field, June 23rd, 1888, p. 901.

ANON. [not signed]. **York S.W.**

The Yorkshire Naturalists' Union [at Saddleworth, 16th June, 1888; *Phoxopteryx myrtillana*, *Larentia didymata*, *Hypsipetis elutata*, *Hadena glauca*, and *Clepsis rusticana* noted]. Research, July 1888, p. 14.

ANON. [not signed]. **York Mid W.**

Leeds Naturalists' Club [at Bishop Wood: *Vanessa atalanta*, *Lycæna alexis*, *Satyrus janira*, *Pygæra bucephala*, *Hibernia progemmaria*, *H. defoliaria*, *H. pilosaria*, *Larentia albicillata*, *L. montanata*, *L. bilineata*, *Liparis auriflua* and *Dicranura vinula* noted]. Research, Aug. 1888, p. 30.

ANON. [not signed]. **Derbyshire.**

Liverpool Naturalists' Field Club [at Miller's Dale, July 12th, 1888; *Abraxas ulmata* in enormous quantities]. Research, Aug. 1888, p. 31.

R. ADKIN. **Lanc. S.**

President's Address [a specimen of *Deilephila euphorbiæ* said to have been recorded from Bowden, near Manchester, by Joseph Chappell]. Proc. South Lond. Ent. and Nat. Hist. Soc. for 1886 (pub. 1887), p. 18.

R. ADKIN. **Lanc. W.**

Crambus contaminellus [exhibited from Preston]. Proc. South London Ent. and Nat. Hist. Soc. for 1886 (pub. 1887), p. 31.

R. ADKIN. **York S.W.**

[Exhibition of Cleoceris viminalis Fl.; from twelve larvæ sent from Barnsley he expected to rear only the black form of the species obtained in that locality; but among them he had bred one of the ordinary forms of the species as found in the South of England]. Proc. South Lond. Ent. and Nat. Hist. Soc. for 1886 (pub. 1887), p. 56.

R. ADKIN. **Westmorland or Furness.**

[Cidaria reticulata, etc., exhibited from near Windermere]. Proc. South Lond. Ent. and Nat. Hist. Soc. for 1886 (pub. 1887), p. 71.

R. ADKIN. **Westmorland or Furness.**

[Cidaria reticulata recently bred by H. Murray from larvæ collected near Windermere, on *Impatiens noli-me-tangere*; specimens exhibited to Ent. Soc. Lond., Dec. 1st, 1886]. Zool., Jan. 1887, xi. 34; Nat., March 1887, p. 69.

J. ARKLE. **Cheshire.**

Entomology of Delamere Forest [69 species of Lepidoptera mentioned in an unsystematic account of the collecting-grounds]. Ent., Jan. 1888, xxi. 2-5.

J. ARKLE. **Lanc. S.**

Nyssia zonaria two years in the Pupa [with a reference to its occurring at Southport]. Ent., May 1888, xxi. 140.

J. ARKLE. **Cheshire.**

Spring Lepidoptera in Cheshire [in Delamere Forest, March 10th, 1888; *Hybernia leucophæaria*, *Phigalia pedaria*, *Larentia multistrigaria*, *Asphalia flavicornis*, *Nyssia hispidaria*, and *Cymatophora or*, the latter two being additions to the Chester Society's Delamere list]. Ent., June 1888, xxi. 161.

J. ARKLE. **Cheshire, Durham.**

Deilephila galii in Cheshire [numerous larvæ on the Wallasey sandhills; account given; reference to occurrence near South Shields some twenty years ago]. Ent., Oct. 1888, xxi. 256.

J. ARKLE. **Cheshire, Lanc. S. and W., Furness.**

Notes from the North-West Counties [i.e. Cheshire (Chester, Delamere Forest, Wallasey sandhills, Hoylake), South Lancashire (Southport), West Lancashire (Heysham Moss near Morecambe), and Furness (Witherslack

Mosses); the species noted are *Cheimatobia brumata*, *Hybernia defoliaria*, *H. rupicapraria*, *H. leucophœaria*, *H. marginaria*, *Nyssia hispidaria*, *Anisopteryx æscularia*, *Larentia multistrigaria*, *Phigalia pedaria*, *Cymatophora or*, *Amphidasys strataria*, *Taeniocampa gracilis*, *T. incerta*, *Tephrosia biundularia* (*laricaria*), *Liparis auriflua*, *Nyssia zonaria*, *Mesotype virgata*, *Taenioc. opima*, *Nomophila ostrinalis*, *Vanessa cardui* in profusion, *Tortrix viridana*, *Cosmia trapezina*, *Hylophila prasinana*, *Hadena glauca*, *Acronycta leporina*, *Cymatophora duplaris*, *Pieris napi*, *P. brassicæ*, *Cœnonympha pamphilus*, *Polyommatus phlœas*, *Lycæna icarus*, *Thecla rubi*, *Bupalus piniarius*, *Ematurga atomaria*, *Lomaspilis marginata*, *Cabera pusaria*, *Macaria liturata*, *Hypsipetes ruberata*, *Cidaria corylata*, *Thera variata*, *Aplecta nebulosa*, *Hepialus hectus*, *H. velleda*, *Panagra petraria*, *Eubolia plumbaria*, *Cymatophora duplaris*, *Ellopia prosapiaria*, *Eucosmia undulata*, *Geometra papilionaria*, *Anarta myrtilli*, *Nemeophila russula*, *Boarmia repandata*, *Lycæna ægon*, *Drepana falcataria*, *Amphidasys betularia* (black male and type female in cop.), *Leucoma salicis*, *Acronycta megacephala*, *Carsia imbutata*, *Hyria auroraria*, *Argynnis selene*, *Syrichthus alveolus*, *Lycæna salmacis*, *Pseudoterpna cytisaria*, *Drepana lacertinaria*, *Melanthia ocellata*, *Nemeophila russula*, *Peronea rufana*, *Notodonta ziczac*, *Gonoptera libatrix*, *Vanessa io*, *Cidaria reticulata*, *Nonagria typhæ*, *Vanessa cardui*, *V. atalanta*, *V. urticæ*, *Bryophila perla*, *Apamea didyma*, *Smerinthus ocellatus*, *S. populi*, *Cosmia pyralina*, *Notodonta dictæoides*, *Deilephila galii*, *Cirrhœdia xerampelina*, and *Acronycta alni*]. Ent., Dec. 1888, xxi. 313-319.

EUSTACE R. BANKES. **Durham or York N.E.**

Coleophora frischella, L. (= **C. trifolii**, Curtis), **versus C. melilotella**, Scott [with a passing allusion to the last-named being found at Stockton-on-Tees in 1860 by John Scott, in the larval state]. Ent. Mo. Mag., June 1888, xxv. 4.

A. D. BARBER. **York S.W.**

[Winter observations near Sheffield; Mottled and Scarce Umber Moths—*Hibernia defoliaria* and *H. aurantiaria*]. Nat. Hist. Journ., March 15th, 1886, x. 41.

A. D. BARBER. **York S.W.**

[Nyssia hispidaria near Sheffield]. Nat. Hist. Journ., Ap. 15th, 1886, x. 59.

GEORGE BOLAM. **Cheviotland.**

Additions to the Lepidopterous Fauna of the [Berwick] District, with notes on the capture of some of the rarer species [*Colias edusa*, *Arctia lubricipeda*, *Liparis salicis*, *Orgyia antiqua*, *Odonestis potatoria*, *Epione apiciaria*, *Hypsipetes ruberata*, *H. elutata*, *H. impluviata*, *Luperina cespitis*, *Nonagria typhæ*, *Cerigo cytherea*, *Agrotis præcox*, *Triphæna subsequa*, *Heliothis armigera*, and *Habrostola triplasia*; all cited from localities in Northumberland, and details of capture given]. Proc. Berw. Nat. Club for 1886 (pub. 1887), xi. 559-561.

J. BOWMAN. **Northumberland S., and Lanc. S. or Chesh.**

Reminiscences of Larvæ-breeding [with references to his experience of *Bombyx quercus*, *Dicranura vinula*, *Acherontia*, *Smerinthus populi*, *Vanessa urticæ*, *V. io*, *V. atalanta* (two latter rare), *Chelonia caja*, and *Pieris brassicæ* at Morpeth, and *Liparis auriflua* at Liverpool]. Sci. Goss., Aug. 1887, pp. 169-171.

F. BOYES. **York S.E.**

[Sphinx convolvuli at Beverley; two fine specimens taken within the last few days]. Field, Sep. 17th, 1887, p. 478.

WM. E. BRADY. **York S.W.**

Melanippe unangulata: a species hitherto unrecorded from Yorkshire [taken at Haw Park near Wakefield; dates and details given]. Nat., Dec. 1884, p. 104.

WM. E. BRADY. **York S.W.**

Erastria fuscula; a species new to Yorkshire [taken in Wharncliffe Wood, 1871 or 1872, by Henry Willits]. Nat., April 1885, p. 206.

WM. E. BRADY. **York S.W.**

Acherontia atropos and Sphinx ligustri near Barnsley [instances quoted, of present and former years]. Nat., Feb. 1886, p. 54.

WM. E. BRADY. **York S.W.**

A List of the Macro-Lepidoptera of Barnsley [from *Notodonta dictæa* to *Phytometra ænea* ; 7 Cuspidates and 159 Noctuæ enumerated, with localities]. Trans. Barnsley Nat. Soc. for 1885-6 (pub. 1887), vol. 5, pp. 15-20.

JOHN BRAIM. **York N.E.**

The Yorkshire Naturalists' Union at Saltburn [May 30th, 1887 ; larval *Pterophorus dichrodactylus* noted in stems of tansy]. Nat., July 1887, p. 219.

E. P. P. BUTTERFIELD. **Furness.**

Lepidoptera [*Asthena sylvata* and *Lobophora viretata*] **at Windermere** [and near Newby Bridge]. Nat., Sep. 1884, p. 42.

E. P. P. BUTTERFIELD. **York S.W.**

Lepidoptera [*Scoparia conspicualis* and *Dicrorhampha herbosana*] **near Bingley** [localities stated]. Nat., Sep. 1884, p. 42.

E. P. P. BUTTERFIELD. **York N.E., Mid W., S.W.**

Lepidoptera near Bingley [*Orthotænia ericetana*, *Melia sociella*, *Penthina dimidiana*, *Stigmonota regiana*, *Retinia pinivorana*, *Scardia arcella*, *Dicrorampha herbosana*, *Scoparia conspicualis*, and *S. atomalis* noted—the last being new for Yorkshire]. Nat., Aug. 1885, p. 292.

E. P. P. BUTTERFIELD. **York Mid W.**

Thecla rubi on Barden Moor, Wharfedale [21st May, 1888, common in a place where an odd one was taken a few years before]. Nat., Aug. 1888, p. 244.

S. J. CAPPER. **Cheshire.**

D[eilephila]. Galii Bred [from a Wallasey larva]. Young Nat., Nov. 1888, ix. 224. [from New Brighton larvæ, ten]. Young Nat., Dec. 1888, ix. 237.

J. T. CARRINGTON. **Durham or Northumberland S.**

[Melanic variety of Larva of *Abraxas grossulariata* taken near Shields, and (as far as he knew) never taken elsewhere]. Proc. South Lond. Ent. and Nat. Hist. Soc. for 1886 (pub. 1887), p. 51.

JOHN T. CARRINGTON. **'York.'**

[Lythria purpuraria ; two undoubted English examples, both taken near York, and one of which he saw alive]. South Lond. Ent. Soc., Jan. 12th, 1888 ; Ent., Feb. 1888, xxi. 70 ; Young Nat., Feb. 1888, p. 38.

J. T. C[ARRINGTON]. **'York.'**

Unusual Union between Moths [i.e. *Taeniocampa stabilis* and *T. gothica*, near York many years ago]. Ent., June 1888, xxi. 158.

JOHN T. CARRINGTON. **York N.E., Cheshire.**

Deilephila galii in 1888 [discussing the faunistic status of the species in England, and referring to its occurrence at Scarborough and on the Wallasey sand-hills]. Ent., Oct. 1888, xxi. 249-251.

JAMES CARTER. **York N.W.**

Notes from [Masham in] North Yorkshire [great abundance in 1888 of *Vanessa cardui*, usually only sparingly noted]. Field, June 9th, 1888, 840.

J. W. CARTER. **York Mid W.**

Erebia Blandina, &c., in Upper Wharfedale [at Grassington, with *Pterophorus serotinus* and *Miana expolita*]. Nat., Oct. 1884, p. 57.

J. W. CARTER. **Linc. N.**

Satyrus tithonus in Lincolnshire [at Owston Ferry, and in 1882 and 1884 near Gainsborough]. Nat., Dec. 1884, p. 104.

J. W. CARTER. **York N.E.**

Ennychia cingulalis, etc., at Helmsley [in July 1885, with *Satyrus hyperanthus*, *Asthena blomeraria*, and *Venusia cambricaria*]. Nat., Oct. 1885, 347.

J. W. CARTER. **York Mid W.**

Lycæna agestis in Upper Wharfedale [at Grassington, July 1886]. Nat., March 1887, p. 66.

J. W. CARTER. **York S.W., York Mid W.**

Melanippe unangulata at Bradford and Barden [details of the captures given]. Nat., March 1886, p. 67.

J. W. CARTER. **York Mid W.**

Phigalia pilosaria in January [1888, on the 22nd, at Shipley Glen]. Young Nat., March 1888, ix. 63.

J. W. CARTER. **York S.W.**

Deilephila galii at Bradford [in Manningham Park, 22nd July; former occurrences at Cleckheaton and Wibsey (1878) noted]. Nat., Sep. 1888, 268.

JOSEPH CHAPPELL. **Lanc. W.**

D[eilephila]. Galii at Manchester [captured at 'Hest Bank near Morecombe,' 21st July, 1888]. Young Nat., Sep. 1888, p. 183.

JOSEPH CHAPPELL. **Cheshire, Lanc. W.**

Captures near Manchester [at Dunham, larvæ of *Chærocampa porcellus*, *Luperina cespitis*; and *Deilephila galii* at Wallasey and Blackpool]. Young Nat., Dec. 1888, ix. 238.

H. S. CLARKE. **Isle of Man.**

[The Eyed Hawk-moth (*Smerinthus ocellatus*) in the Isle of Man; writer claims to have found the first specimen ever obtained on the Island]. Manx Note Book, No. 9, Jan. 1887, iii. 47.

R. AUGUSTINE CLARKE. **Lanc. W.**

Deilephila galii in Lancashire [one at Rossall School near Fleetwood, in a fives-court, 22nd July]. Ent., Dec. 1888, xxi. 321.

York Mid W.

W. EAGLE CLARKE, W. DENISON ROEBUCK, and WILLIAM STOREY.

Upper Nidderdale and its Fauna . . . Lepidoptera [an enumeration of 56 species for Pateley and of 122 for Birstwith, the latter on the authority of F. T. Walker]. Nat., July 1886, pp. 208-210.

T. D. A. COCKERELL. **Lanc. S., Cheshire.**

A September Walk through Lancashire, Cheshire, and Staffordshire [*Spilosoma lubricipeda* and *S. menthastri* noted Sep. 9th, 1885, between Liverpool and Prescott; *Hadena protea* at Chelford, Sep. 11th]. Nat., Feb. 1886, p. 57.

JOSEPH COLLINS. **Lanc. S.**

Larvæ of [Deilephila] Galii on Willow Herb at Risley Moss, near Warrington [found Sep. 22nd, 1888, while beating for larval *Leiocampa dictæoides*; numerous *D. galii* found]. Young Nat., Oct. 1888, ix. 204.

JOHN CORDEAUX. **York S.E., Linc. N.**

The Spurn [as a locality for Rare Insects, *Sphinx convolvuli*, *Vanessa antiopa*, *Colias edusa*, *Deilephila galii*, *Chærocampa porcellus*, *Euchelia jacobææ*, *Leucania littoralis*, *Tapinostola elymi*, *Nonagria lutosa*, *Mamestra abjecta*, *Agrotis valligera*, *A. ripæ*, *A. corticea*, *A. cursoria*, *A. tritici*, *A. aquilina*, *A. præcox*, *A. ravida* having occurred]. Nat., Aug. 1884, 1-8.

JOHN CORDEAUX. **Linc. N. and S.**

Lincolnshire [with reference to disappearance of *Lycæna dispar*, *Papilio machaon*, Red Wainscot (probably 'Reed' Wainscot, *Nonagria cannæ*), Rosy Marsh (*Noctua subrosea*), Red Leopard (probably 'Reed' Leopard, *Phragmatœcia arundinis*), and Whittlesea Ermine (*Arctia urticæ*)]. Nat., Jan. 1886, p. 11.

T. A. COWARD. **Cheshire.**

[Scotosia dubitata in disused copper-mines at Alderley Edge, Jan. 7th, 1888]. Zool., June 1888, p. 222.

G. W. K. Crosland. **York S.W., Mid W., and N.E.**

Scopula ferrugalis at Huddersfield [one at Grimescar Wood, 31st Aug., 1888; Scarborough and Harrogate, the only previous Yorkshire records]. Nat., Nov. 1888, p. 331.

Elizabeth Cross. **Linc. N.**

Acronycta alni in Lincolnshire [larva beaten off birch at Appleby near Brigg, Sep. 3rd, 1888; *Notodonta dictæoides* occurs]. Ent., Oct. 1888, 258.

C. W. Dale. **Durham, Westmorland, Cumberland, Lanc., Yorksh., Linc. S.**

The History of our British Butterflies [issued as a separately paged appendix to successive numbers of the 'Young Naturalist,' and entering in great detail into the life-history and variation of each species; at p. 109, range of *Erebia medea* stated and details of Castle Eden Dene occurrence given; *Cœnonympha polydama* and *C. typhon* taken in Yorkshire by P. W. Watson (p. 105); full details given of *Erebia epiphron* var. *cassiope*, mountains round Ambleside, taken by Thos. Stothard, 11th June, 1809, and by J. C. Dale and J. Curtis, June 1827; also by the latter on Red Skrees, and by Mr. Marshall at Gable Hill and Styehead, between Wastwater and Borrowdale (p. 113); *Apatura iris* noted as far north as Lincolnshire (p. 121); *Limenitis sibylla* comes up on the east coast as far as Lincolnshire (p. 132); variety of *Vanessa io* taken at Hull in 1837 (in coll. auct.) has the eye-spot on hind wings replaced by a white blotch (p. 154); *V. antiopa*, one in coll. J. E. Robson, taken near Castle Eden Dene, crawling out of some burning underwood (p. 158); the Seaton Carew record of numbers about 1820 strewing the sea shore repeated, also Wailes' S.E. Durham and Morris' Rawmarsh records (p. 160); *V. antiopa*, in 1846 in Yorksh., Lincs., Notts, in 1872 most plentiful between Humber and Tyne; in 1874 one seen at Newcastle (pp. 161-162); *Van. urticæ*, var. from Hawkeshead, Lancs. figd. by Newman (p. 163); a swarm at Xmas 1855, Isle of Man (p. 165); Wailes' 1858 record of *V. polychloros* from Northumberland and Durham repeated (p. 168); a singular variety of *Vanessa C-album* taken near Doncaster and given to J. C. Dale by F. O. Morris, has all the black spots on the hind wings run into one large patch (p. 170); Stephens' record (1828) that *V. C-album* is abundant near York (fide Backhouse) repeated (p. 173); a few were taken in Norfolk as recently as 1861, and also in Yorkshire and Durham (p. 174); *Argynnis aglaia* var. *charlotta* 'appears to be least rare in the North of England' (p. 177); *A. adippe* v. *chlorodippe* H.S. 'has been taken by Mr. Gregson near Windermere, in Westmorland' (p. 180); *A. niobe* is recorded (Ent. viii. 83) as taken by Gregson in Aug. 1871, at the Devil's Gallop near Windermere (p. 181); York and Scarborough are the most northerly records for Britain for *Arg. lathonia* (p. 183); in 1868 one occurred as far N. as Scarborough (p. 187); *A. euphrosyne* is equally abundant in Northumberland and Durham (p. 190); *Melitæa cinxia* formerly occurred in Lincs. and Yorksh. for which counties various records from 1702 downwards are given (p. 195). Young Nat., Jan. 1888, pp. 105, 109, Feb., p. 113, March, p. 121, April, p. 132, July, pp. 154, 158, 160, Aug., pp. 161, 162, 163, 165, 168, Sept., pp. 170, 173, 174, Oct., pp. 177, 180, 181, 183, Nov., pp. 187, 190, and Dec., p. 195.

George Dawson. **Cumberland.**

Pupa of Erebia epiphron [as noted in the Lake District of Cumberland, July 1888; *Larentia cæsiata* and *Emmelesia minorata* (*ericetata*) also noted]. Ent., Sep. 1888, xxi. 230.

George C. Dennis. **York N.E.**

The Yorkshire Naturalists' Union at Helmsley [Aug. 4th, 1884; three *Pierides*, *Argynnis paphia*, *Vanessa urticæ*, *Satyrus janira*, *S. hyperanthus*, *Chortobius pamphilus*, *Thecla quercus*, *T. W.-album*, *Lycæna alexis*, *Boarmia repandata*, *Asthena blomeraria*, *Ypsipetes elutata*, *Cidaria immanata*, and *Charæas graminis* noted; *Vanessa C-album* not seen]. Nat., Sep. 1884, 42.

G. C. Dennis. **York S.W.**

The Yorkshire Naturalists' Union at Askern [May 20, 1886; larval *Leucania impura* noted]. Nat., June 1886, p. 190.

G. C. DENNIS. **York S.E.**

The Yorkshire Naturalists' Union at Flamborough Head [14th June, 1886; *Eupithecia lariciata* noted]. Nat., July 1886, p. 217.

G. C. DENNIS. **York Mid W.**

The Yorkshire Naturalists' Union in Upper Nidderdale [July 1886; *Acidalia remutata*, *Cabera pusaria*, *Emmelesia alchemillata*, *E. albulata*, *Eupithecia minutata*, *Melanippe montanata*, *Tanagra chærophyllata*, *Epunda viminalis*, *Anarta myrtilli*, and *Tortrix viburnana* noted]. Nat., Aug. 1886, p. 254.

G. C. DENNIS. **York N.W.**

The Yorkshire Naturalists' Union in Lower Wensleydale [at Leyburn, 21st May, 1888; *Pieris rapæ*, *Vanessa urticæ*, *Thera obeliscata*, and larvæ of *Nudaria mundana* noted]. Nat., June 1888, p. 172.

N. F. DOBRÉE. **York N.E.**

The Yorkshire Naturalists' Union at Pickering [Aug. 1886; *Canonympha pamphilus* and *Eup.* (supposed) *pulchellata* noted]. Nat., Sep. 1886, p. 274.

N. F. DOBRÉE. **York N.E.**

Yorkshire Naturalists at Gormire Lake and Thirkleby Park [the lepidoptera noted were *Argynnis aglaia*, *Polyommatus agestis*, *P. alsus*, *Macroglossa stellatarum*, *Anthrocera filipendulæ*, *Gnophos obscurata*, *Anaitis plagiata*, *Hydrocampa nymphæalis*, *Pyrausta purpuralis*, *Eup. pulchellata*, *Leucania impura*, *L. pallens*, *Miana expolita*]. Nat., Aug. 1887, p. 238.

N. F. DOBRÉE. **York S.E.**

The Yorkshire Naturalists' Union at Market Weighton [6th Aug., 1888; *Euthemonia russula* and *Bryophila perla* noted]. Nat., Sep. 1888, p. 279.

C. WOLLEY DOD. **Cheshire.**

Thecla W.-album in Cheshire [two bad specimens caught Aug. 30th in the parish of Malpas]. Field, Sep. 8th, 1888, p. 373; Ent., Oct. 1888, xxi. 256.

ED[ITOR]S. [OF NATURALIST]. **York S.E.**

Agrotis ripæ at Spurn: a Correction [of an erroneous record of it as 'riparia']. Nat., Dec. 1884, p. 104.

EDS., N.H.J. **Yorkshire.**

Ackworth Reports [note of *Crocallis elinguaria*, *Ennomos tiliaria*, *Boarmia rhomboidaria*, *Polia chi*, and *Dicranura vinula*]. Nat. Hist. Journ., Nov. 15th, 1886, x. 167.

J. W. E[LLIS]. **Cheshire.**

Heliothis peltigera at Wallasey, &c. [taken by R. Wilding]. Nat., Sep. 1884, p. 42.

JOHN W. ELLIS. **Cheshire.**

Heliothis peltigera [at Wallasey sandhills, two, in June or July, 1884]. Nat., Feb. 1886, p. 49.

JOHN W. ELLIS. **Lanc. S., Cheshire.**

Lepidopterous Fauna of Lancashire and Cheshire [213 species of Noctuæ]. Nat., Sep.-Oct. 1886, pp. 285-306 [7 Deltoidæ, 2 Nycteolidæ, 1 Chlœphoridæ, 1 Brephos, and 206 Geometræ]. Nat., March and April 1887, pp. 93-115. . . . Part vii.:—Pyralidina [86 species cited]. Nat., Dec. 1887, pp. 367-374.

JOHN W. ELLIS. **Cheshire.**

Rearing Bombyx rubi [which occurs on the Wallasey sand-hills]. Sci. Goss., April 1887, p. 93.

W. FINCH, JUN. **Notts.**

Eccentricities of Insect Life [as observed near Nottingham in 1887; abundance of *Triphæna pronuba* detailed at some length]. Sci. Goss., April 1888, p. 93.

W. FINCH, JUN. **Lincolnshire.**

Fox Eggars [(*Bombyx rubi*) with passing reference to the larvæ being in great numbers on the Lincolnshire coast, close to the sea, feeding on brambles]. Sci. Goss., April 1888, p. 94.

W. W. FOWLER. **Linc. N.**

[Acronycta alni and Leiocampa dictæa at electric light on Lincoln Cathedral, Jubilee night, 1887]. Proc. Ent. Soc. Lond., Dec. 7th, 1887; Zool., Jan. 1888, p. 37; Ent. Mo. Mag., Jan. 1888, xxiv. 192; Ent., Jan. 1888, xxi. 20; Young Nat., Jan. 1888, p. 14; Nat. Monthly, Feb. 1888, 118.

W. W. FOWLER. **Linc. N.**

Moths [Leiocampa dictæa and Acronycta alni] attracted by the Illuminations of Lincoln Cathedral [on Jubilee Day, June 21st and 22nd, 1887; electric light]. Nat., April, 1888, p. 114.

W. A. GAIN. **Notts.**

Sphinx convolvuli in Nottinghamshire [at Tuxford, Aug. 23rd, 1887]. Nat., Nov. 1887, p. 351.

J. GARDNER. **Durham.**

Chærocampa nerii at Hartlepool [23rd July, 1885]. Nat., Aug. 1885, 292.

J. GARDNER. **Durham.**

The Locality for certain Agrotidæ [is Hartlepool, not Darlington; see Bibliography (Lepidoptera, 1885-6-7) in Nat., March 1888, p. 62]. Nat., April 1888, p. 110.

J. GARDNER. **Durham.**

Distribution, time of appearance, habits, size, &c., of the genus Selenia [as observed near Hartlepool, where *S. illunaria* occurs commonly and *S. lunaria* sparingly, and *S. illustraria* not at all]. Ent. Mo. Mag., May 1888, xxiv. 275.

J. GARDNER. **Durham.**

Deilephila galii at Hartlepool [24th July, and a week before; particulars given]. Nat., Sep. 1888, p. 268.

J. GARDNER. **Durham.**

Larvæ of Deilephila galii at Hartlepool [on the sand-hills; two found on *Galium verum* on the 23rd Sep. 1888]. Nat., Oct. 1888, p. 286.

R. GARFIT. **Linc. N.**

Catocala fraxini in North Lincolnshire [at Hogsthorpe, Sep. 1875; particulars of capture given]. Nat., March 1887, p. 69.

R. GARFIT. **Linc. N.**

Sphinx convolvuli in Lincolnshire [at Alford, two, Sep. 22nd and 29th, 1887]. Nat., Nov. 1887, p. 351.

ROBERT GARFIT. **Linc. N.**

Deilephila galii at Alford, Lincolnshire [2nd Aug., 1888]. Nat., Sep. 1888, p. 268.

F. GAYNER and B. S. ROWNTREE. **Lanc. S.**

A Day on the Southport Sand-Hills [June 9th, 1888; *Lycæna icarus*, *Euchelia jacobææ*, *Plusia gamma*, and *Pyrameis cardui* noted]. Nat. Hist. Journ., Sep. 15th, 1888, xii. 123.

T. GIBB, JUN. **? Derbyshire.**

Exhibition of *Asthena blomeri* Curt.: *Hepialus velleda* var. *carnus* St., and a variety of *Melanippe montanata*, all taken in the neighbourhood of Burton-on-Trent]. Proc. South Lond. Ent. and Nat. Hist. Soc. for 1886 (pub. 1887), p. 40.

HUGH GOODFELLOW. **Cumberland.**

Deilephila galii in Cumberland [at Carlisle, 21st July, 1888; details of capture given]. Ent., Aug. 1888, xxi. 210.

H. Goss. **Lanc. W., Westmorland, Furness.**

The Lepidopterous Fauna of Lancashire and Cheshire [notes on the occurrence of *Leucophasia sinapis*, *Cœnonympha typhon* (*davus*), *Polyommatus corydon*, and *Thecla betulæ*, at Grange, Silverdale, Arnside, Witherslack, etc.]. Nat., April 1885, p. 206.

C. S. Gregson. **Isle of Man.**

Isle of Man Varieties [of Lepidoptera: *Dianthœcia cæsia* var. *mannani*, *D. capsophila*, *D. conspersa*, *Agrotis lucernea*, *Phlogophora meticulosa*, *Aplecta nigra*, and *Polia nigrocincta* treated of]. Young Nat., Aug. 1888, ix. 163.

J. T. G[umersall]. **Cumberland.**

Butterflies at Seascale (Cumb.) [*Satyrus tithonus* and *Vanessa cardui*]. Nat. Hist. Journ., Sep. 15th, 1887, xi. 139.

J. T. G[umersall]. **Lanc. S.**

Moths at Penketh [*Macroglossa stellatarum*, *Smerinthus ocellatus*, and *Plusia iota*]. Nat. Hist. Journ., Sep. 15th, 1887, xi. 139.

A. E. Hall. **York S.W.**

Vanessa antiopa at Sheffield in 1875. Nat., Aug. 1885, p. 292.

A. E. Hall. **? York S.W.**

Chesias spartiata in February [bred by G. Rose of Barnsley; locality not given]. Ent., April 1888, xxi. 112.

A. E. Hall. **York S.W.**

Lepidoptera in March [1888, at Ecclesall Wood near Sheffield; *Cymatophora flavicornis*, *Phigalia pilosaria*, *Hybernia progemmaria*, *H. leucophæaria*, and *Anisopteryx æscularia* captured, but the formerly-abundant *Nyssia hispidaria* not found]. Young Nat., May 1888, ix. 103.

A. E. Hall. **York S.W.**

Abundance of Larvæ [in Ecclesall Wood near Sheffield; *Hybernia progemmaria*, *H. aurantiaria*, *H. defoliaria*, *Phigalia pedaria*, *Oporobria dilutata*, and *Tæniocampa pulverulenta*]. Ent., Aug. 1888, xxi. 212.

A. E. Hall. **York S.W.**

The Abundance of Plusia gamma [near Sheffield; all worn, therefore hybernated]. Ent., Aug. 1888, xxi. 212.

A. E. Hall. **York S.W.**

Lycæna Alexis, Hb. [females shot with blue, taken this year in field bordering Edlington Wood, Doncaster; normal form of female very scarce there]. Ent. Mo. Mag., Oct. 1888, xxv. 103.

A. E. Hall. **York S.W.**

Lepidopterous Larvæ near Sheffield [beating on Sep. 17th, 1888, produced a few each of *Cymatophora fluctuosa*, *Drepana lacertinaria*, *Notodonta dromedarius*, *N. dictæoides*, *Lophopteryx camelina*, and *Cidaria corylata* on birch, and of *Venusia cambricaria* on mountain ash]. Ent., Nov. 1888, xxi. 281.

T. W. Hall. **Derbyshire.**

[Exhibition of series of *Cleoceris viminalis* Fl. and *Xanthia fulvago* L., both bred from Derbyshire larvæ; Mr. South remarked that one or two of the series of *X. fulvago* looked like dark forms of *X. fulvago* Fl., and were probably hybrids between the two species]. Proc. South Lond. Ent. and Nat. Hist. Soc. for 1886 (pub. 1887), p. 32.

S. Robinson Hallam and F. Hallam. **? Derbyshire.**

Lepidoptera of Mavesyn Ridware [in Staffordshire; includes a note of *Sphinx convolvuli* taken in a brewery yard at Burton-on-Trent, Sep. 1887]. Nat. World, Dec. 1887, iv. 204-205.

G. F. Harding. **York S.W.**

Lepidoptera near Halifax in 1887 [three *Cymatophora ridens* and one *Sphinx convolvuli*]. Nat., Aug. 1888, p. 244.

JAMES HARDY. **Cheviotland or Northumberland S.**

Report of Meetings of Berwickshire Naturalists' Club, for the year 1885. . . . Rothbury [24th June; *Bombyx rubi* (larva) and *Saturnia carpini* noted]. Proc. Berw. Nat. Club for 1885 (pub. 1886), xi. 42.

JAMES HARDY. **Cumberland, Northumberland S.**

Report of Meetings of Berwickshire Naturalists' Club for the year 1885. . . . Haughton Castle, Simonburn Church, and Chipchase Castle, North Tyne [30th July; *Dicranura vinula* noted at Hexham and plentifully on willows near Carlisle]. Proc. Berw. Nat. Club for 1885 (pub. 1886), xi. 51.

JAMES HARDY. **Durham, Northumberland S., Lanc. S., Cumberland.**

The History of Charæas graminis, the Grass or Antler Moth, on the Borders [with notices of ravages committed at Meldon Park near Morpeth in 1821, at Clitheroe in 1881, on Skiddaw about 1824, of its occurring at South Shields, and of its commonness on the links at Newbigin-by-the-Sea]. Proc. Berw. Nat. Club for 1885 (pub. 1886), xi. 195-205.

G. P. HARRIS. **York N.W.**

The Yorkshire Naturalists' Union at Hawes [28th June, 1884; three *Pieridæ*, *Anthocharis*, four *Vanessæ*, *Chortobius pamphilus*, *Lycæna alexis*, *Melanippe montanata*, *Coremia munitata*, *Hepialus hectus*, *H. humuli*, and *Venusia cambricaria* noted]. Nat., Aug. 1884, p. 18.

JOHN HARRISON. **York S.W.**

Varieties of Ephyra punctaria and Numeria pulveraria near Barnsley [described]. Nat., Jan. 1886, p. 18.

H. W. HEAD. **York N.E.**

Deilephila galii in Yorks. [one in central Scarborough, July 19th, at rest on a leaf]. Ent., Sep. 1888, xxi. 231.

THOS. H. HEDWORTH. **Durham.**

Stigmonota dorsana at Axwell [in a field at Hagg Hill, 27th May, 1888]. Nat., Aug. 1888, p. 246.

T. C. HEYSHAM. **Cumberland.**

[Scotophila purpurea and Anarta myrtilli the food of *Lanius excubitor* (Great Shrike) in Cumberland in 1831]. Macpherson and Duckworth's Birds of Cumberland, 1886, p. 27.

JOHN F. HILLS, Secretary. **York N.E.**

[Colias edusa reported at Bootham, York, proved to be *Pieris brassicæ*]. Nat. Hist. Journ., June 15th, 1888, xii. 111.

J. F. HILLS [, Secretary]. **York Mid W.**

York, Bootham. Natural History Club [*Anthocharis cardamines*, female, at Askham, 4th June, 1887 (E. D. Doncaster)]. Nat. Hist. Journ., Sep. 15th, 1887, xi. 132.

J. F. HILLS [, Secretary]. **York S.E. and S.W.**

York, Bootham. Natural History Club [Orange (*Angerona prunaria*) and Carpet Moths (indefinite!) at Pocklington, Sep. 19th, 1887 (W. B. Barber); Red Underwing (*Catocala nupta*), Cleckheaton (J. H. Crosland); this last is 'decidedly rare in the North.']. Nat. Hist. Journ., Oct. 15th, 1887, xi. 161. [See next title].

J. F. HILLS, Secretary. **Yorkshire.**

York, Bootham. Natural History Club [J. H. Crosland reports that the Red Underwing, mentioned on p. 161, was not taken in the North of England, as he had previously understood]. Nat. Hist. Journ., Nov. 15th, 1887, xi. 188.

J. B. HODGKINSON. **York Mid W., Lanc. W.**

Lycæna corydon in the North of England [near Settle and Bentham, and under Warton Crags near Carnforth, with *Thecla quercus*]. Nat., June 1885, p. 246.

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J. B. Hodgkinson. **Cumberland.**

Lycæna corydon in Cumberland [where it used to occur at Grisedale, at the foot of Saddleback]. Ent., Feb. 1888, xxi. 54.

J. B. Hodgkinson. **Derbyshire.**

Agrotis fennica [repetition of particulars of the Chesterfield example now in York Museum]. Ent., Feb. 1888, xxi. 59.

J. B. Hodgkinson. **Westmld. and Furness, Lanc. W., Isle of Man.**

Northern Lepidoptera in 1887 [at Windermere, Isle of Man, Wyresdale, and 'the moors'; very numerous species referred to]. Ent., April 1888, xxi. 104-108, and erratum, May 1888, xxi. 141.

J. B. Hodgkinson. **Lanc. S. or W.**

Nepticula minusculella in Lancashire [near Ashton-on-Ribble presumably; also *N. hodgkinsonii* and *Micropteryx sparmanella*; food-plants stated, but not locality]. Ent., June 1888, xxi. 160.

J. B. Hodgkinson. **Westmld., Furness, Isle of Man, Lanc. W. or S.**

A Lepidopterist's Memoranda in 1888 [numerous *Nepticulæ*, *Lithocolletis frölichiella*, *L. kleemannella*, *L. stettinensis*, *Glyphipteryx oculatella*, *Catoptria aspidiscana*, *Micropteryx mansuetella*, *Lithocolletis vacciniella*, *Incurvaria canariella*, *Eriopsela fractifasciana*, *Mimæseoptilus hodgkinsoni*, *Opadia funebrana*, *Penthina postremana*, *Stigmonota roseticolana*, *Cœnonympha typhon*, *Acidalia fumata*, *Aspilates strigillaria*, *Coleophora wilkinsoni*, *Lithosia mesomella*, *Adela viridella*, *Ennychia octomaculata*, *Eupithecia constrictata* (Isle of Man), *E. valerianata*, *Lycæna astrarche* var. *salmacis*, *Phothedes captiuncula*, *Crambus falsellus*, *C. pinellus*, *C. warringtonellus*, *Argyresthia aurulentella*, *Coleophora olivaceella*, *Choreutes myllerana*, and *Elachista monticola* noted, for Windermere, Witherslack, Arnside, and Preston]. Ent., Dec. 1888, xxi. 294-298.

R. C. Ivy. **Lanc. S.**

Pupation of Cossus [ligniperda; as observed near Southport; interesting details; second note explains term 'cop' used in the first]. Ent., April and June, 1888, xxi. 110 and 155.

R. C. Ivy. **Lanc. S.**

Hybernia marginaria near Southport [at Crossens; variation described]. Ent., June 1888, xxi. 157.

R. C. Ivy. **Lanc. S.**

Nyssia zonaria near Southport [decreasing numerically year by year; details given]. Ent., June 1888, xxi. 156.

J. A. Jackson. **Lanc. W.**

Notes on the Blackheaded Gull near Garstang [and on a few lepidoptera of 'Gull Moss,' viz. *Satyrus tithonus*, *Chortobius davus*, *Anarta myrtilli*, *Chelonia plantaginis*, *Carsia imbutata*, *Hyria auroraria*, and *Crambus margaritellus*]. Nat., May 1887, p. 130.

W. Jesper. **Westmorland.**

Early Butterflies [on Whitbarrow Scar near Kendal, April 12th, 1887, *Rhodocera rhamni* and *Vanessa urticæ*]. N. H. J., May 16th, 1887, xi. 85.

H. Wallis Kew. **Linc. N.**

Satyrus tithonus in Lincolnshire [abundant at Louth and Mablethorpe; at the latter so is *Cœnonympha pamphilus*]. Nat., March 1885, p. 174.

H. Wallis Kew. **Lincs. N.**

A Postglacial Ravine [at Welton Vale near Louth; *Diurnea fagella* noted April 11th, 1885, very plentiful on trunks of oak and elm]. Nat. World, Feb. 1886, iii. 21-22.

H. Wallis Kew. **Linc. N.**

Another Postglacial Ravine [Hubbard's Valley near Louth] and its inhabitants [*Triphæna pronuba*, *Mania maura* and *Abraxas ulmata* referred to]. Nat. World, March 1886, iii. 41.

H. Wallis Kew. **Linc. N.**

The Greasy-field and Grisel-bottom [near Louth; *Melitæa aurinia*, *Spilosoma fuliginosa*, *Euclidia mi*, *E. glyphica*, *Ino statices*, *Zygæna filipendulæ*, *Tortrix viridana*, *Epinephile janira*, *Vanessa urticæ*, *Melanargia galatea*, *Charæas graminis*, *Polyommatus phlæas*, *Gonepteryx rhamni*, *Vanessa io*, *V. atalanta*, *V. cardui*, and *Lycæna icarus*, mentioned]. Nat. World, June 1886, iii. 101-102.

H. Wallis Kew. **Linc. N.**

A Half-Day's Ramble on the Lincolnshire Coast [at Mablethorpe, April 3rd, 1886; Satin Moth (*Leucoma salicis*, larva), noted]. Nat., June 1886, p. 172.

H. Wallis Kew. **Linc. N.**

Pteromalus puparum [parasitic on *Vanessa atalanta*] near Louth. Nat., July 1886, p. 213.

H. Wallis Kew. **Linc. N.**

In the Woods [near Louth] in Summer [*Cœnonympha pamphilus*, *Lycæna icarus*, *Hesperia sylvanus*, *Polyommatus phlæas*, *Euclidia glyphica*, *Epinephile hyperanthus*, *Vanessa urticæ*, *Argynnis paphia* and *Thecla quercus*, mentioned]. Nat. World, July 1886, iii. 121-124.

H. Wallis Kew. **Linc. N.**

Evenings in Spring [near Louth; *Tæniocampa gothica* noted]. Nat. World, Sep. 1886, iii. 162.

H. Wallis Kew. **Linc. N.**

[Euchelia jacobææ plentiful at Mablethorpe]. Sci. Goss., Sep. 1886, p. 208.

H. Wallis Kew. **Linc. N.**

Natural History Rambles. No. I.—In the Woods [near Louth, where the capture of *Lycæna icarus* and *Amphipyra tragopogonis* is noted]. Sci. Goss., Feb. 1887, p. 31.

H. Wallis Kew. **Linc. N.**

Old Chalk-pits [near Louth; *Epinephile hyperanthus*, *Pamphila sylvanus*, *Vanessa atalanta*, *Melanargia galathea*, *Chrysophanus phlæas*, *Cœnonympha pamphilus*, and 'wood ringlets' (?)]. Nat. World, May 1888, iii. 81-82.

A. Knoblauch. **York S.W.**

Urapteryx sambucaria, larva of [on chestnut-tree in the park, Bradford, Oct. 12th, 1888; no ivy near, but plenty of elder at thirty yards]. Ent., Nov. 1888, xxi. 278.

J. Larder. **Linc. N.**

A Strip of Lincolnshire Coast [at Mablethorpe; *Euchelia jacobææ* in abundance]. Wesl. Nat., Nov. 1887, i. 283.

B. B. L[e].T[all]. **Yorkshire.**

York, Bootham. Natural History and Scientific Club [Tortoise-shells (*Vanessa urticæ*) and 'Whites' (*Pieris*, species not stated) noted]. Nat. Hist. Journ., May 15th, 1886, x. 80.

B. B. Le Tall [Secretary]. **Lake District, York N.E. and S.W.**

York, Bootham. Natural History Club [phenological notes on *Anthocharis cardamines* and *Vanessa atalanta* at York; var. with very dark under-side of *Satyrus janira* at the Lakes; var. of *Spilosoma lubricipeda* at Bootham, York; *Geometra papilionaria* near Sheffield; *Nemeophila plantaginis* and Beautiful Small Yellow Underwing (? *Anarta myrtilli*) at Whitby]. Nat. Hist. Journ., Oct. 15th, 1886, x. 151-2.

W. Lipscomb. **York S.W.**

Grouse and their Food [at Walshaw, Hebden Bridge; with a reference to *Juncus squarrosus* being there much infested by larvæ of *Coleophora cæspititiella* (names supplied by editor of Field)]. Field, Oct. 16th, 1886, 574.

E. Little. **York S.W.**

A Common White Butterfly [*Pieris*, query species?] appeared March 2nd [1888, at Ackworth]. Nat. Hist. Journ., April 14, 1888, xii. 72.

Wm. McRae. **Cumberland.**

The Duke of Burgundy (*Nemeobius Lucina*) [ranges from Cumberland southwards]. Wesl. Nat., Feb. 1888, i. 365.

Philip Brooke Mason. **Linc. N. or S.**

[Hermaphrodite Saturnia carpini from Lincoln, exhibited]. Proc. Ent. Soc. London, May 2nd, 1888, p. xv; Zool., June 1888, p. 240; Ent. Mo. Mag., June 1888, xxv. 19; Ent., June 1888, xxi. 164.

Philip Brooke Mason. **Linc. N. or S.**

Hermaphroditism in the Emperor Moth [(*Saturnia carpini*); from Lincoln; exhibited to Ent. Soc. Lond., May 2nd, 1888]. Nat., July 1888, p. 199.

P. B. Mason. **? Derbyshire.**

[Exhibition of Chærocampa nerii captured at Burton-on-Trent]. Proc. Ent. Soc. Lond., October 3rd, 1888; Zool., Nov. 1888, p. 432; Ent., Nov. 1888, xxi. 284; Ent. Mo. Mag., Nov. 1888, xxv. 143; Young Nat., Nov. 1888, p. 219.

E. N. Mennell. **York N.E.**

[A 'Common Golden Y' (? *Plusia iota* or *P. gamma*), taken at 20, Bootham, York]. Nat. Hist. Journ., Nov. 15th, 1886, x. 172.

S. L. Mosley. **York S.W.**

Annual Report, 1883. . . . Entomology [noting occurrence of *Chelonia plantaginis*, *Geometra papilionaria*, and abundance of *Dasypolia templi*, *Miselia oxyacanthæ*, *Himera pennaria*, several *Hybernia*, and *Exapate gelatella*, near Huddersfield]. Trans. Huddersfield Nat. Soc., Part 1 (pub. 1884?), pp. 7-8, with woodcut of *Chelonia caja* var., bred at Almondbury Bank, now in coll. S. Webb.

S. L. Mosley. **York S.W.**

A Catalogue of the Lepidoptera found in the Huddersfield District.—Macro-Lepidoptera [350 species included, with localities and remarks on comparative frequency; prefaced by notes as to the district]. Trans. Huddersfield Nat. Soc., Part 1 (dated Dec. 1883), pp. 13-30.

S. L. Mosley. **York S.W.**

Annual Report, 1884. . . . Entomology [*Stenopteryx hybridalis*, *Crambus inquinatellus*, *Eupœcilia dubitana*, *Argyrolepia cnicana* (given in error as *Conchylis smeathmanniana*), *Coleophora fuscedinella*, *C. gryphipennella*, *C. acyonipennella*, *Elachista gleichenella* and *Argyresthia retinella*, for all of which localities are cited, are new to Huddersfield list; captures of a *Psyche*, *Celæna haworthii*, *Oporabia filigrammaria*, *Scoparia coarctalis*, and *Nonagria fulva* also placed on record; reference made to reappearance of *Ennychia octomaculata* in Beaumont Park]. Trans. Huddersfield Nat. Soc., Part 2 (pub. 1885?), pp. 7-9; and erratum at p. 32.

A. M. Moss. **Westmorland or Furness.**

Amphydasis strataria [and Dicranura vinula] near Windermere [with notes as to comparative numbers, and a distinct variety (described) of the first-named, and food-plant of latter]. Ent. June 1888, xxi. 156.

H. Murray. **Lanc. W.**

Colias edusa in Cumberland [one taken 'near here' (Carnforth) Aug. 1887; had not previously occurred with us for about ten years]. Ent., Jan. 1888, xxi, 12.

H. MURRAY. **Furness or Lanc. W.**

Cidaria reticulata malformed [seven bred 1887, near Carnforth, all crippled; attributed to the dryness of the season]. Ent., Jan. 1888, xxi. 16.

T. H. NELSON. **York N.E.**

Hybernating Butterflies [*Vanessa cardui* in great numbers between Redcar and Marske, June 12th and 13th]. Field, June 30th, 1888, p. 936.

W. NELSON. **York S.E.**

A Day's Collecting near Howden, Yorks. [*Lycæna phlæas* noted, 30th May, 1887]. Journ. of Conch., Jan. 1888, vol. 5, p. 263.

WM. NEWMAN. **Durham or York N.E.**

Cidaria suffumata var. **piceata [near Darlington**: the species not so common as formerly; a larger proportion than known before were of the variety]. Ent., Aug. 1888, xxi. 212.

F. W. PAPLE. **Lanc. S.**

Liparis salicis [found in August, in all stages, at Southport]. Sci. Goss., Dec. 1888, p. 282.

F. N. PIERCE. **Lanc. S.**

Newspaper Entomology [criticism of a paragraph anent a 'full-grown butterfly' at Manchester in January]. Young Nat., March 1888, p. 62.

G. T. PORRITT. **York S.W.**

List of the Micro-Lepidoptera of Huddersfield and neighbourhood [3 deltoids, 27 pyrales, 10 crambites, 109 tortrices, 168 tineæ, and 10 pterophori noted—327 in all—with localities, etc.]. Trans. Huddersfield Nat. Soc., Part 1 (dated Dec. 1883), pp. 31-46.

GEO. T. PORRITT. **York S.W.**

Eupœcilia dubitana in Yorkshire [at Dungeon Wood, Huddersfield, June 1884; new to Yorkshire list]. Nat., Aug. 1884, p. 15.

G. T. PORRITT. **York S.W.**

Phycis betulella, &c., near Doncaster [taken 31st May, in Green Farm Wood; *Geometra papilionaria* also taken]. Nat., Sep. 1884, p. 42.

GEO. T. PORRITT. **York N.E.**

Agdistes Bennettii at Redcar [a second taken by J. Sang, establishing its position as a Yorkshire insect]. Nat., Sep. 1884, p. 42.

GEO. T. PORRITT. **York S.W.**

Crambus inquinatellus at Huddersfield [taken in Aug. 1884, at Bilberry Reservoir near Holmfirth]. Nat., Oct. 1884, p. 57.

GEO. T. PORRITT. **York S.W.**

Seasonal Notes on Lepidoptera (South-West Yorkshire) [*Oporabia filigrammaria* and *Celæna haworthii*, Greenfield and Huddersfield; *Scoparia coarctalis* and *Vanessa cardui* at Huddersfield]. Nat., Oct. 1884, p. 57.

GEO. T. PORRITT. **York S.W.**

Coleophora fusco-cuprella: a Correction [the Doncaster specimens of the 'Yorkshire List' turned out to be not that species]. Nat., Dec. 1884, p. 104.

GEO. T. PORRITT. **York S.W.**

Hepialus humuli [an unusual variation in the females, observed about Huddersfield]. Nat., Dec. 1884, p. 104.

GEO. T. PORRITT. **York S.W.**

Stenopteryx hybridalis and Argyresthia retinella at Huddersfield [localities and particulars given]. Nat., Dec. 1884, p. 104.

GEO. T. PORRITT. **York Mid W.**

Phoxopteryx diminutana in Yorkshire [at Bishop Wood, 2nd June, 1884; new to the county]. Nat., Dec. 1884, p. 104.

G. T. PORRITT. **York S.W.**

Yorkshire and Nottinghamshire Naturalists at Anston Stones [30th April; *Herbula cespitalis* noted]. Nat., June 1885, p. 261.

GEO. T. PORRITT. **York S.W.**

Lepidoptera in the Green Farm Wood, Doncaster, May 30th, 1885 [*Phycis betulella*, *Coleophora currucipennella*, *Geometra papilionaria*, *Cheimatobia boreata*, *Phoxopteryx ramana*, *Arctia mendica*, and *Platypteryx falcula* noted]. Nat., Aug. 1885, p. 292.

G. T. PORRITT. **York S.W.**

Curious place for a Cuckoo's egg [and capture of *Hyria auroraria* and *Acidalia straminata*, on Thorne Waste, July 1885]. Nat., Oct. 1885. p. 344.

GEO. T. PORRITT. **York S.E., Cheshire, Lanc. S.?**

Heliothis peltigera in Yorkshire [taken at Kilnsea, Holderness, by W. Eagle Clarke, Sep. 6th, 1885; new to the Yorkshire list; editorial note appended, giving British distribution]. Nat., Oct. 1885, p. 347.

GEO. T. PORRITT. **Yorkshire, Westmorland.**

Localities of Collix sparsata and Eupithecia constrictata [the latter at Witherslack, as well as both in Yorkshire; note corrective of Owen Wilson]. Nat., Oct. 1885, p. 347.

GEO. T. PORRITT. **York Mid W.**

The Yorkshire Naturalists' Union at Blubberhouses [26th Sep., 1885; *Arctia fuliginosa*, *Saturnia carpini*, *Oporabia filigrammaria*, *Eupithecia pulchellata*, *Cidaria psittacata*, *Celæna haworthii*, *Stenopteryx hybridalis*, *Coleophora murinipennella*, *Argyresthia conjugella*, all taken during the day, and *Satyrus tithonus*, *Nudaria mundana*, *Acidalia incanaria*, *Venusia cambricaria*, *Larentia pectinitaria*, *Emmelesia affinitata*, *E. alchemillata*, *Melanthia rubiginata*, *M. ocellata*, *Cidaria populata*, *C. pyraliata*, *C. fulvata*, *Leucania impura*, *Crambus pratellus*, *C. margaritellus*, *Tortrix forsterana*, *Amphysa gerningana*, *Sciaphila virgaureana*, *Grapholitha trimaculana*, *G. penkleriana*, *Coccyx ustomaculana*, *Xylopoda fabriciana*, *Eupœcilia angustana*, *Xanthosetia hamana*, *Conchylis stramineana*, *Aphelia pratana*, *Grapholitha geminana*, *Dicrorampha herbosana*, *Depressaria pulcherrimella*, and *Pterophorus pterodactylus* taken by Thos. Eedle, July 1885]. Nat., Nov. 1885, p. 380.

GEO. T. PORRITT. **York S.W.**

Entomological Notes from Huddersfield [anent *Grapholita geminana*, *Ephippiphora brunnichana*, *Penthina sauciana*, *Gelechia politella*, *Argyresthia conjugella*, *A. cnicana*, *Coleophora nigricella*, *Tischeria complanella*, *Lithocolletis salicicolella*, *Eupœcilia dubitana*, *Scoparia coarctalis*, *S. muralis*, *Tortrix costana*, *Acidalia inornata*, *Sphinx convolvuli*, and *Acherontia*]. Nat., Jan. 1886, p. 16.

GEO. T. PORRITT. **York S.W.**

Oncocera ahenella and Catoptria expallidana in Yorkshire [being the evidence in support of the validity of the Huddersfield occurrences, the only ones for Yorkshire]. Nat., March 1886, p. 66.

GEORGE T. PORRITT. **York S.W., N.E., Mid W.**

Tortrix transitana (diversana) Spilonota rosæcolana, and Depessaria weirella in Yorkshire [at Edlington Wood near Doncaster, at York, and at Saltburn, where also occurred *Dep. douglasella* and *Pterophorus dichrodactylus*]. Nat., Jan. 1887, p. 21.

G. T. PORRITT. **York S.W.**

[Variation in Huddersfield examples of *Cidaria suffumata* and *Hypsipetes elutata*; specimens exhibited]. Ent. Soc. Lond., Dec. 1st, 1886; Zool., Jan. 1887, xi. 35; Nat., March 1887, p. 69.

GEO. T. PORRITT. **York N., Lanc. S.**

Lepidoptera, etc., on the North-East Coast of Yorkshire, in August 1886 [a list of 96 species captured; and a casual reference to black Southport examples of *Agrotis nigricans*]. Nat., March 1887, pp. 67-69.

GEORGE T. PORRITT. **York S.W.**

Variation in Hybernia progemmaria [at Huddersfield; melanism on the increase]. Ent. Soc. Lond., April 6th, 1887; Nat., Aug. 1887, p. 228; Zool., May 1887, xi. 199.

GEORGE T. PORRITT. **Linc. N.**

Coleophora obtusella in Lincolnshire [larvæ taken by J. Eardley Mason at Chapel near Alford]. Nat., Oct. 1887, p. 290.

G. T. PORRITT. **Durham.**

[The Brown Form of Crambus perlellus at Hartlepool occurs with the ordinary typical form, and is there regarded as only a variety of it]. Ent. Soc. Lond., Oct. 5th, 1887; Zool., Nov. 1887, xi. 436; Nat. Monthly, Nov. 1887, p. 60.

G. T. PORRITT. **Yorkshire.**

[Melanic variation in *Diurnea fagella* **at Huddersfield,** from which neighbourhood the typical pale form has almost disappeared]. Ent. Soc. Lond., Oct. 5th, 1887; Zool., Nov. 1887, xi. 437; Nat. Monthly, Nov. 1887, p. 60.

G. T. PORRITT. **Yorkshire, Isle of Man.**

[Exhibition of *Cidaria russata* **from Yorkshire,** Isle of Man and other localities, those from the two named being almost black]. Proc. Ent. Soc. Lond., Dec. 7th, 1887; Zool., Jan., 1888, 3rd Series, xii. 37; Ent., Jan. 1888, xxi. 20 (as *C.* '*truncata*'); E.M.M., Jan. 1888, xxiv. 192; Young Nat., Jan. 1888, ix. 14; Nat. Monthly, Feb. 1888, p. 118.

GEORGE T. PORRITT. **York S.W. and N.E.**

Yorkshire Entomological Notes [*Aplecta tincta*, *Depressaria badiella*, *Pædisca bilunana*, and *Gelechia politella* near Huddersfield, *Dep. weirella* at York, *Nepticula tormentillæ* on the West Riding moors]. Nat., Jan. 1888, p. 12.

GEO. T. PORRITT. **York Mid W. and N.W., Westmorland.**

The Supposed Yorkshire Nepticula tormentillæ [is a new and unnamed species]; and the occurrence of another species [*Lithocolletis sorbiella*, at Ingleborough and Richmond] new to the county. Nat., March 1888, p. 82.

GEORGE T. PORRITT. **Isle of Man.**

An Entomological Expedition to . . . . . the Isle of Man [in Aug. 1887; 50 species noted, with localities]. Nat., April 1888, pp. 103-106.

GEO. T. PORRITT. **York Mid W.**

Nepticula serella [new to Britain; taken at Ingleborough by Mr. E. R. Bankes]. Nat., May 1888, p. 151.

GEO. T. PORRITT. **York S.W.**

Description of the Larva of Euclidia mi [taken June 5th, 1886, at Green Farm Wood, Doncaster]. Ent. Mo. Mag., June 1888, xxv. 13-15.

G. T. PORRITT. **York S.E.**

Yorkshire and Lancashire Naturalists at Saddleworth [16th June, 1888: *Hadena glauca* (commonly), *Phoxopteryx myrtillana*, and *Clepsis rusticana* noted round Bill's-o'-Jack's]. Nat., July 1888, p. 213.

Naturalist,

GEO. T. PORRITT. **York S.W.**

Variation in Arctia mendica [bred from a batch of eggs found near Huddersfield in 1887; the variation described]. Ent. Mo. Mag., July 1888, xxv. 39; Proc. Ent. Soc. Lond., July 4th, 1888, Part 3, p. xxiii; Zool., Aug. 1888, p. 316; Ent., Aug. 1888, xxi. 214; Ent. Mo. Mag., Aug. 1888, xxv. 72; Young Nat., Aug. 1888, ix. 159.

GEORGE T. PORRITT. **Chesh., York N.E., Mid W., and S.W.**

Deilephila galii in 1888 [in various localities; and in the larval form on Wallasey sand-hills]. Nat., Oct. 1888, p. 298.

GEORGE T. PORRITT. **York S.W., Notts.**

Euperia fulvago and Acronycta alni near Doncaster [in Wadworth Wood; *Lobophora hexapterata* there also; previous Yorkshire records recapitulated]. Nat., Nov. 1888, p. 331.

GEO. T. PORRITT. **York S.W.**

Melanism in Boarmia repandata [near Huddersfield; specimens described and variation discussed]. Ent. Mo. Mag., Dec. 1888, xxv. 161.

L. RICHARDSON. **York N.E.**

The York School Excursion to Scarbro', June 10th, 1886 [*Anthocharis cardamines*, *Cidaria silaceata*, 'Common Carpets,' *Argynnis euphrosyne*, *Fidonia atomaria*, *Saturnia carpini*, and *Bombyx rubi* (cocoon) noted in Bee Dale]. Nat. Hist. Journ., Feb. 15th, 1888, xii. 14.

ALFRED RIDGWAY and FREDK. W. RIDGWAY. **York Mid W.**

Ramble from Sherburn Station to Cawood, Yorkshire [Aug. 1st, 1887; *Vanessa urticæ*, *Pieris brassicæ*, *P. rapæ*, *Satyrus janira*, and *Lycæna agestis* noted]. Nat. Hist. Journ., May 15th, 1888, xii. 92.

JOHN E. ROBSON. **Durham.**

Heliothis peltigera in the North of England; three Co. Durham instances cited]. Nat., Dec. 1885, p. 393.

JOHN E. ROBSON. **Durham, York S.W.**

In Memoriam.—John Sang [mentioning his capture at Wakefield in 1848 of *Deilephila celerio*, *Elachista gregsonella*, and *Dichrorhampha tanacetana*, at Coniscliffe, and *Elachista paludum* and *Heliozele resplendella* at Hellkettles]. Nat., Feb. 1888, pp. 52-54.

JOHN E. ROBSON. **Lanc. S., Isle of Man, York S.W., etc.**

A Visit to Liverpool [notes on C. S. Gregson and his collection]. Young Nat., April 1888, pp. 101-103. [*Agrotis spinifera*, Isle of Man, named by Doubleday; *Aplecta nebulosa*, dark examples from Sheffield; all in C. S. Gregson's collection]. Young Nat., June 1888, ix. 121-123.

J. E. ROBSON. **Durham.**

Abundance of certain species of Lepidoptera [at Hartlepool and elsewhere; *Vanessa cardui*, *Plusia gamma*, and *Anthocharis cardamines*]. Young Nat., July 1888, ix. 143.

JOHN E. ROBSON. **Durham.**

Ephippiphora Regiana [at Hartlepool and in Upper Teesdale]. Young Nat., July 1888, ix. 144.

JOHN E. ROBSON. **Durham.**

Heliothus [sic] **Peltigera [at Hartlepool,** June 15th, 1888, a fine female: the third taken there]. Young Nat., July 1888, ix. 144.

J. E. ROBSON. **Durham.**

Deilephila galii at Hartlepool [one, 18th July, 1888, and a second a day or later]. Young Nat., Aug. 1888, ix. 163.

JOHN E. ROBSON. **Isle of Man.**

Isle of Man Varieties [of lepidoptera; *Dianthœcia cæsia* var. *mannani*, *D. capsophila*, *D. conspersa*, and *Agrotis lucernea* treated of]. Young Nat., Aug. 1888, ix. 164.

J. E. ROBSON. **Cheshire.**

Deilephila galii in 1888 [general considerations, with a remark on its abundance on the Cheshire sand-hills]. Young Nat., Oct. 1888, ix. 198-199.

J. E. ROBSON. **'York.'**

[Exhibition of five varieties of *Zygæna loniceræ* and var. *eboracæ*, from one field near York; at an exhibition of South Lond. Ent. Soc., Oct. 17th, 1888]. Young Nat., Nov. 1888, ix. 223.

JOHN T. RODGERS. **Lanc. S.**

Miana strigilis [near Oldham; the black form—*æthiops* Haw.—only taken till this year, when two or three with white markings occurred]. Young Nat., Oct. 1888, ix. 204.

W. D. ROEBUCK. **York S.W.**

The Yorkshire Naturalists' Union at Hatfield Chace [21st Sep., 1887: *Saturnia carpini*, *Bombyx rubi*, and *Eubolia cervinaria* noted]. Nat., March 1888, p. 85.

A. J. ROSE. **Westmorland and Furness.**

[Exhibition of varieties of *Boarmia repandata* L. from Ambleside, and *Nudaria mundana* L., which had been plentiful on walls in the Lake District]. Proc. South Lond. Ent. and Nat. Hist. Soc. for 1886 (pub. 1887), 69.

RUDOLPH ROSENSTOCK. **York Mid W.**

The Yorkshire Naturalists' Union at Boroughbridge [25th May, 1885; *Swammerdamia comptella* and *S. pyrella*]. Nat., July 1885, p. 280.

M. ROUTLEDGE. **Cumberland.**

Sugaring near Carlisle [since July 11th, 1888, produced *Agrotis segetum*, *A. exclamationis*, *Leucania pallens*, and *Xylophasia monoglypha*, while a bed of Valerian attracted *Plusiidæ* and *Cucullia umbratica*]. Ent., Aug. 1888, xxi. 212.

M. ROUTLEDGE. **Cumberland.**

Lepidoptera in Cumberland [at Hayton, Carlisle; *Aplecta nebulosa*, *Charæas graminis*, *Bryophila perla*, *Agrotis tritici*, *Galleria mellonella*, and *Ellopia prosapiaria* were the best captures in July and August]. Ent., Nov. 1888, xxi. 280.

J. H. ROWNTREE. **York S.E.**

The Yorkshire Naturalists' Union at Spurn Point [3rd Sep. 1884: three *Vanessæ*, *Lycæna alexis*, *Agrotis tritici*, *Plusia gamma*, *Pterophorus pterodactylus*, *Stenopteryx hybridalis*, *Agrotis riparia* [error for *A. ripæ*], *Pieris brassicæ*, and *Macroglossa stellatarum* noted]. Nat., Nov. 1884, p. 92; also see Dec. 1884, p. 104.

J. H. ROWNTREE. **York N.E.**

The Yorkshire Naturalists' Union at Whitby [3rd August, 1885; *Satyrus janira*, *Metrocampa*, *Boarmia rhomboidaria*, *Abraxas grossulariata*, *Eubolia mensuraria*, *Camptogramma bilineata*, and *Cidaria russata* or *immanata* noted]. Nat., Oct. 1885, p. 349.

J. H. ROWNTREE. **York N.E.**

Acronycta alni and other Moths [*Plusia interrogationis* and *Hepialus velleda*] **near Scarborough** [localities and dates given]. Nat., Oct. 1887, p. 290.

J. SANG. **? Durham or York N.W.**

Hemerobius inconspicuus, McLach., **bred** [along with *Retinia pinivorana* from Scotch fir, locality not stated, query near Darlington?]. Ent. Mo. Mag., Jan. 1885, xxi. 192.

JOSEPH T. SEWELL. **York N.E.**

Scoria dealbata at Whitby [recorded as new to Yorkshire; the record turned out an error, the species being *Spilodes palealis*]. Nat., Aug. 1886, 251.

JOSEPH T. SEWELL. **York N.E.**

Spilodes palealis near Whitby [new to Yorkshire; was in former note erroneously recorded as *Scoria dealbata*]. Nat., Sep. 1886, p. 276.

W. G. SHELDON. **Derbyshire.**

[Observations on collecting *Tephrosia crepuscularia* **in Derbyshire,** from which it appeared that in some of the woods which had been thinned, the insect was generally found on the trunks of oak trees, and was the light form, whereas those found in another wood which was very thick, were very dark, and in some cases almost black]. Proc. South Lond. Ent. and Nat. Hist. Soc. for 1886 (pub. 1887), p. 56.

CHARLES SMETHURST. **York Mid W.**

Lepidoptera near Ilkley [being records of *Plusia interrogationis*, *Epunda viminalis*, *Xanthia cerago*, *X. silago*, *Cidaria fulvata*, *C. pyraliata*, and *Cynthia cardui*, with localities stated]. Nat., June 1885, p. 246.

BERNARD SMITH. **Notts.**

Notes on the Notodontidæ. . . No. 4.—*Notodonta chaonia* and *N. trimacula* [the var. *dodonæa* of the latter is found in Sherwood Forest, 'the larvæ nestling in the deep wrinkles of the bark of its aged oaks during the day']. Ent., Feb. 1888, xxi. 37.

RICHARD SOUTH. **Yorkshire.**

President's Address [reviewing the additions to the British fauna during the year; remarks on 'A *Gelechia* taken by Mr. Sang, amongst *Artemisia maritima*, in salt-marshes near Redcar, in July, is described by Mr. Stainton under the name of *G. tetragonella*']. Proc. South Lond. Ent. and Nat. Hist. Soc. for 1885 (pub. 1886), pp. 17, 18.

R. SOUTH. **? York S.W.**

[Exhibition of a fine series of *Hybernia marginaria* and var. *fuscata*, bred from ova received from J. Harrison of Barnsley]. Proc. South Lond. Ent. and Nat. Hist. Soc. for 1886 (pub. 1887), p. 35.

[RICHARD] SOUTH. **York S.W., Durham.**

[Exhibition of melanic Aplecta nebulosa from Rotherham, bred with five others of ordinary form; and two dark vars. of *Eubolia limitata* from Durham]. Proc. Ent. Soc., Sep. 5th, 1888, Part 3, p. xxvi.; Zool., Oct. 1888, 3rd Series, xii. 395; Ent. Mo. Mag., Oct. 1888, xxv. 117; Ent., Oct. 1888, xxi. 260.

[RICHARD] SOUTH. **Durham.**

[Exhibition and description of a series of *Lycæna icarus* from Bishop Auckland and Castle Eden]. Proc. South Lond. Ent. Soc., Sep. 13th, 1888; Ent., Oct. 1888, xxi. 262; Ent. Mo. Mag., Oct. 1888, xxv. 116; Young Nat., Oct. 1888, ix. 201.

H. T. STAINTON. **Westmorland.**

Nepticula serella, N. sp. [described from a Scotch and three specimens bred by I. H. Threlfall from larvæ found in *Potentilla tormentilla* found on the moors of Westmorland]. Ent. Mo. Mag., April 1888, xxiv. 260.

H. T. STAINTON. **? Lanc. or Furness.**

Description of a New Nepticula from Beech [*N. fulgens* Stn., bred by I. H. Threlfall; locality nowhere stated, but very possibly in the North West of England]. Ent. Mo. Mag., June 1888, xxv. 12-13.

A. STEWARD. **Lanc. S.**

Synia musculosa in Lancashire [at Eccles, one at light, 24th August; an aberrant form, described]. Ent., Oct. 1888, xxi. 258.

J. A. Erskine Stuart. **York S.W.**

Early appearance of a ['common white'] Butterfly [at Staincliffe near Dewsbury, 24th March, 1886]. Nat. World, May 1886, iii. 98.

C. K. Tero. **Linc. N.**

Rumia luteolata variety [with ground colour pure white; near Grimsby presumably]. Ent., Jan. 1888, xxi. 15.

Ben. Blaydes Thompson. **York Mid W.**

Deilephila galii at Harrogate [26th July, 1888, one taken hovering over *Delphinium formosum*]. Nat., Sep. 1888, p. 268; Ent. Mo. Mag., Sep. 1888, xxv. 91; also (as '*Deilephila galii* in Yorks.'), Ent., Sep. 1888, xxi. 231.

Chas. F. Thornewill. **Derbyshire.**

Thecla w-album in Derbyshire [near Burton-on-Trent, in larval state; details given as to capture, food-plant, pupation, etc.]. Ent., July 1888, xxi. 184.

John Thorpe. **Lanc. S.**

[Buff and Melanic varieties of *Amphidasis betularia* from Middleton near Manchester, exhibited to Ent. Soc. Lond., Oct. 1886]. Nat., Nov. 1886, p. 348.

I. H. Threlfall. **Westmorland.**

On the supposed Nepticula tormentillella [writer has bred (1887) several specimens of a Nepticula feeding in *Potentilla tormentilla* on the moors of Westmorland, which do not agree with the description of *N. tormentillella*]. Ent. Mo. Mag., Jan. 1888, xxiv. 186.

Jas. H. Tomlinson. **Notts.**

Amphidasys betularia var. doubledayaria [near Newark, at various times, but the type only once]. Ent., March 1888, xxi. 91.

W. H. Tugwell. **? Lanc. W. or S.**

[Exhibition of Crambus contaminellus from Preston; 'Herrich-Schäffer, in his work, figured the Lancashire form of [*Crambus*] *contaminellus*, both male and female.'] Proc. South Lond. Ent. and Nat. Hist. Soc. for 1886 (pub. 1887) p. 33.

W. H. Tugwell. **Durham.**

[Exhibition of some interesting forms of *Spilosoma menthastri*, bred from ova received from Hartlepool]. Proc. South Lond. Ent. and Nat. Hist. Soc. for 1886 (pub. 1887), p. 41.

J. W. Tutt. **Linc., York S.W., Mid W., S.E., Chesh., Northumb. S.**

Contributions towards a List of the Varieties of Noctuæ occurring in the British Islands [*Cymatophora duplaris* L. var. *argentea* mihi (described) from Lincolnshire; *C. diluta* F. var. *nubilata* Robs. & Gardn., from Yorkshire (sent by J. Harrison of Barnsley); *Asphalia flavicornis* L. var. *scotica* Staud., from Yorkshire, where it is occasionally captured with the type; *Bryophila perla* F. var. *suffusa* mihi (described), of which form are all the few Yorkshire specimens seen by the writer; *Acronycta psi* L. var. *bivirgæ* mihi (described) captured on York racecourse by J. T. Carrington, and now in coll. Sidebotham; *A. leporina* L. var. *bradyporina* Tr., the prevalent form near York (Prest), throughout the East Riding (Dobrée), and at Liscard (N. Cooke), to all whose remarks refer]. Ent., Feb. 1888, xxi. 44-52. [*Acronycta ligustri* F. var. *olivacea* Dobrée, East Yorkshire and near York (refer); *A. rumicis* L. var. *salicis* Stn., not uncommon near Beverley; *A. menyanthidis* Vw. var. *obsoleta* mihi (described), Bradford district (refer for account of a remarkable asymmetrical specimen); var. *suffusa* mihi, Bradford district]. Ent., March 1888, xxi. 81-87. [*Leucania conigera* F. var. *suffusa* mihi (described) from Morpeth]. Ent., April 1888, xxi. 101. [*Leucania lithargyria* Esp., of which Dobrée remarks that some of the Beverley specimens display a very pronounced tendency to a darker shade on the hind margin of the upper wings]. Ent., May 1888, xxi. 137. [*Leucania comma* L. var. *suffusa* mihi; from Yorkshire, and Morpeth (latter described), etc.]. Ent.,

Naturalist,

June 1888, xxi. 154. [*Leucania pallens* var. *arcuata* Steph., Rotherham, captured by Mr. Young (described)]. Ent., July 1888, xxi. 180. [Several forms of *Nonagria geminipuncta* Haw. from 'Yorkshire']. Ent., Sep. 1888, xxi. 226. [*Calamia lutosa* and *C. phragmitidis*, and their variation and distribution near Beverley, as noted by N. F. Dobrée]. Ent., Oct. 1888, xxi. 252-254. [*Xylophasia scolopacina* and *X. sublustris* darker in Yorkshire than near London; quotation from Porritt's Yorkshire List respecting *Gortyna ochracea* Hb. in East Riding, and additional notes by N. F. Dobrée thereon]. Ent., Nov. 1888, xxi. 269-271. [*Hydræcia nictitans* and var. *rosea* at Barnsley (Harrison)]. Ent., Dec. 1888, xxi. 307-309.

J. W. TUTT. **Lanc. S., Cheshire.**

Variation of Certain Agrotidæ [Lancashire and Cheshire coast examples of *A. cursoria* referred to in the course of argument]. Ent., Aug. 1888, 198, etc.

J. W. TUTT. **York S.W.**

Boarmia gemmaria, var. perfumaria, in Yorkshire [at Rotherham (Young) and Huddersfield (Porritt); the usual form at the latter place]. Ent., Nov. 1888, xxi. 278.

HOWARD VAUGHAN. **Isle of Man, Durham or York N.E.**

Variation in the Genus Cidaria [*C. immanata* from Isle of Man, and *C. suffumata* from Darlington]. Nat., July 1886, p. 213; Proc. Ent. Soc. Lond., May 5th, 1886; Zool, June 1886, x. 257.

HOWARD VAUGHAN. **Yorkshire, Cheviotland.**

Entomology and Geology [Variation of *Gnophos obscurata* from Yorkshire, Berwick-on-Tweed, and other places]. Sci. Goss., Jan. 1887, p. 17.

HOWARD VAUGHAN. **Yorkshire, Cheviotland.**

[Variation in Gnophos obscurata in connection with geological formations, illustrated by specimens from Yorkshire, Berwick-on-Tweed, and other places, exhibited]. Proc. Ent. Soc. Lond., Dec. 1st, 1886; Zool., Jan. 1887, xi. 34; Nat., March 1887, p. 69.

SAMUEL WALKER. **York N.E.**

Sphinx convolvuli at York [two, Aug. 28th and 30th, 1888]. Ent., Oct. 1888, p. 256; and Nat. Hist. Journ., Nov. 1888, p. 187.

J. R. WELLMAN. **York S.W.**

Hypsipetes sordidata Fb. [dark forms exhibited from Barnsley; the larvæ had probably fed on heather]. Proc. South Lond. Ent. and Nat. Hist. Soc. for 1886 (pub. 1887), p. 34.

[J. R.] WELLMAN. **York S.W.**

[Partially Melanic Specimen of Venusia cambricaria from Sheffield, exhibited to South Lond. Ent. Soc., Aug. 23rd, 1888]. Young Nat.. Oct. 1888, ix. 200; Ent., Oct. 1888, xxi. 261; Ent. Mo. Mag., Oct. 1888, xxv. 116.

THOMAS WILSON. **York Mid W.**

Lepidoptera near York in 1884 [being notes on the occurrence of *Macroglossa stellatarum*, *Orgyia gonostigma*, *Drepana falcataria*, *Amphydasis strataria*, *Tephrosia crepuscularia*, *Geometra papilionaria*, *Eupithecia valerianata*, *Penthina corticana*, *P. ochroleucana*, *Tortrix viridana*, *T. costana*, *Ephippiphora similana*, *Stigmonota germarana*, *Eupœcilia nana*, *Hedya servillana* (new to Yorkshire), *Pyrodes rheediana*, *Fumea intermediella*, *Lampronia prælatella*, *Incurvaria muscalella*, *Swammerdamia griseocapitella*, *Cerostoma vittella*, *Depressaria pimpinellæ*, *Gracilaria stigmatella*, *Ornix loganella*, *Coleophora limosipennella*, *C. discordella*, *Bedellia somnulentella* and *Elachista apicipunctella*]. Nat., March 1885, p. 174.

THOS. WILSON. **York Mid W.**

Lepidoptera near York [notes on *Tephrosia crepuscularia*, *Numeria pulveraria*, *Dicranura furcula*, *Xanthia citrago*, *Heliodes arbuti*, *Coleophora paripennella*, *C. siccæfolia*, and *Nemotois minimellus*, with localities, etc.]. Nat., Oct. 1886, p. 306.

NOTES ON NORTH OF ENGLAND ROCKS.

III.

ALFRED HARKER, M.A., F.G.S.

It is not a little curious that so little has hitherto been written on the minute structure and constitution of our British calcareous rocks, presenting, as they do, so many points of interest bearing on the conditions under which they were laid down, and the marine-life of the several periods to which they belong. The study is, indeed, one well worth the attention of amateur geologists. The rocks are met with in most parts of the country; sections of them are easily prepared for the microscope; and their study requires no high-power objectives nor appliances for polarised light. With such a guide as Dr. Sorby's Address to the Geological Society (1879), the composition of the normal calcareous sediments presents few difficulties, and a comparative study of limestones from various horizons and different districts would certainly yield results of interest.

In the present paper only a few examples will be briefly noticed, and these will be selected from the Oolites of East Yorkshire. The series was named long ago by William Smith, from the prevalence in its calcareous members of the well-known oolitic structure; but it should be noted that this character is by no means peculiar to the rocks in question, being often developed in the Mountain Limestone, the Magnesian Limestone, and others of very various ages.

The chief marine member of the Lower Oolites in Yorkshire is the so-called *Millepore Oolite*. Here the rocks, unless taken from some considerable depth, are always stained yellow or brown, owing to the oxidation of the contained iron compounds. The first specimen is selected from a quarry on the west side of the high-road not far north of Brough [1087]. The oolitic grains, which make up the bulk of the specimen, show very evident concentric coats of brown-stained carbonate of lime, but little or no radial structure. The nucleus about which these concentric coats have been deposited is in most cases a fragment of some organism, such as a chip of a shell, and the various organic remains seen in the slide are invariably covered with a brown coat, even when this is not developed sufficiently to form an ovoid oolitic grain. Many of the shell-fragments are such as might be derived from the valves of certain lamelli branchs. There are also fragments, often of rather oblong form, which consist of a single plate of brown-stained calcite with

two sets of strongly-marked cleavage-lines. These are doubtless joints from the stems of crinoids, the structure being highly characteristic of the joints and plates of the echinodermata. The various grains and fragments are enclosed and compacted by a mosaic consisting of irregular crystalline grains of calcite, in which are imbedded a few small angular fragments of quartz.

A specimen [1088] from the so-called 'Cockle Quarry,' a little farther south and on the opposite side of the road, is a less pure limestone, and contains more of the little quartz fragments. The oolitic character, however, is well seen in a part of our slide, and the grains here are formed sometimes around a fragment of shell, sometimes around a rolled pellet of what must have been a calcareous mud. In the other parts of the slide the pieces of shells and pellets of mud are not covered by any coating of calcareous deposit. Some of the shell-fragments appear to belong to *Pecten*; others, with wavy form, represent the little *Rhynchonella spinosa* (*crossii*) so abundant at this place, and a few cross-sections of its spines are also seen.

Going a few miles farther north, to Sancton, we take a specimen of a very typical oolite [1089]. Here even the occasional quartz-granules are thickly coated with brown-stained carbonate of lime and built up into oolitic grains, and the mud-pellets have invariably undergone the same process. Some of the grains have apparently no nucleus, and these may show a very evident radial structure like the spokes of a wheel. Most of the oolitic grains, however, are formed upon fragments of organisms, none of which have escaped this deposit of material on their surface. The chambered tests of foraminifera are not uncommon. The valves of both brachiopods and lamelli branchs are well represented, the latter showing a feature very characteristic of these shells: the carbonate of lime which originally composed their mineral substance was in the form of aragonite, and this has been replaced by the more stable form calcite, in clear granular patches preserving the outline of the original shell but nothing of its internal structure. The matrix in which all these various grains are set is, as before, a mosaic of clear crystalline calcite.

One other specimen of the Millepore Oolite may be noticed. This is taken from Westow near Malton, where the formation is known as the Whitwell Limestone [945]. Here may be recognised the fragmentary remains of crinoids, entomostraca, and other calcareous organisms, with one or two scraps of bone, all covered with the usual concentric coats of iron-stained carbonate of lime to form ovoid oolitic grains. Other grains have for nucleus an angular, or more rarely a rounded, fragment of quartz, or, again, a rolled

pellet of calcareous brown mud. Some show a feature often observable in such rocks; viz., they are composite, enclosing two or three pellets or organic fragments in one shell or mantle. The matrix of crystalline calcite contains some angular quartz-granules without any coating.

This frame-work of calcite, occupying one-third or one-fourth of the bulk of the rock, must be regarded as of posterior origin to the accumulation of the deposit, and is by no means essential. The oolites of other districts often lack this matrix, and have in consequence a porous texture. Such is the case in some of the building-stones derived from the Lincolnshire Limestone, which is a thicker development of the Millepore Oolite. The specimen sliced [1090], from the Ancaster quarries, shows the grains to be loosely compacted without any cementing material. The organisms seen are for the most part foraminifera and chips of brachiopod shells showing a laminated or fibrous structure. Many of the grains consist of a pellet of amorphous material surrounded by the usual coating, in which a radial as well as a concentric structure is well marked.

We pass on to the next calcareous member of the Yorkshire Oolites, the Scarborough Limestone. Our specimen [946] is a rather gritty grey limestone from the beach below Wheatcroft, Scarborough. It contains abundance of little irregularly shaped grains of quartz, which have sometimes fluid-pores, sometimes glass-cavities, and are probably from more than one source. The chief fossil remains are scraps of shell probably belonging to *Pecten*. These and the quartz-grains are embedded in a crowd of minute yellow crystals, which are either chalybite (the carbonate of iron) or perhaps a ferriferous dolomite. Each little crystal has an opaque centre, probably of pyrites.

One of the nodular iron-stone bands at the same locality was also sliced [947]. This too has little scattered angular grains of quartz enclosing fluid-pores; but the great bulk of the specimen consists of minute yellow crystals of chalybite. The quartz-grains are often fractured, and the cracks filled in with the yellow ground-mass of chalybite. The slide shows here and there a red-brown stain of iron-oxide.

Our specimen of the Cornbrash from Gristhorpe Bay [1022] again shows numerous angular grains of quartz. It contains a great variety of organic fragments. Some scraps of lamelli branch shells, originally no doubt composed of aragonite, have been converted into patches of crystalline calcite-mosaic, while calcite shells, either brachiopods or some oyster-like bivalve, retain their proper structure. Little oval sections, each behaving as a single crystal of calcite, must

be spines of an echinoid. The ground-mass of the rock, where not recrystallised, is an iron-stained calcareous mud with pyritous specks.

The interesting characters of the Yorkshire Kelloways rock have been noticed by Dr. Sorby, and we may therefore pass on to the higher calcareous members of the Middle Oolites. A specimen from the 'Ball-beds' of the Lower Calcareous Grit at Filey is crowded with little sub-angular grains of quartz, while the matrix is so deeply stained with iron-oxide that little or nothing can be seen [1023]. There are, however, plenty of shell-fragments with a strong, slightly oblique, lamellar structure, referable to *Pecten*. Other specimens would, no doubt, show other organisms. It will be remembered that the Lower Calcareous Grit of Scarborough yields the little kidney-shaped bodies, first noticed by Dr. Sorby, and recently shown by Dr. Hinde to be the globate spicules of a siliceous sponge.

In a slide from the 'Lower Limestone' of the Filey Calcareous Grit [1024], the most conspicuous fossil remains are wavy sections of valves of *Rhynchonella thurmanni*. Brachiopoda are usually stated to have shells composed entirely of calcite, but here the occurrence within the lamellated calcite test of a zone of irregularly crystalline calcite rather suggests that the shell had originally an inner layer of aragonite. The other organic remains present are a few chambered tests of foraminifera, joints of crinoid-stems, consisting each of a single crystal of calcite, and calcite pseudomorphs after the aragonite shells of lamellibranchs. Oolitic grains are seen, often formed on a scrap of some organic substance. The general calcareous matrix is for the most part crystallised on a minute scale, the impurities being, as is usually the case, concentrated in particular patches.

The Middle Calcareous Grit, which forms the prominent feature of Filey Brigg, presents few points of novelty [1025]. It is crowded with little angular and sub-angular quartz-grains, containing either glass- or fluid-inclusions. The next specimen is taken from the 'Upper Limestones' of the same series [1025*a*]. The slide shows numerous sections of rather thick shells replaced by an aggregate of crystalline calcite, and apparently belonging to *Trigonia*. Other shells, which have kept their original structure, must be referred to *Lima* or *Pecten*. There are others, again, which seem to have had layers of aragonite and calcite. Some scraps of shell with a transverse fibrous structure probably represent entomostraca; while chambered foraminifera and remains of crinoids are also to be detected. The quartz-grains which occur are rather angular. The matrix is tolerably free from impurities, and the greater part of it has recrystallised as a fine mosaic of calcite.

A specimen of the Coral Oolite from Peasy Hill quarry at Malton is a very pure limestone [1026]. The most abundant fossil is *Chemnitzia heddingtonensis*, which appears to have consisted, like most gasteropoda, entirely of aragonite, and is now seen to be replaced by calcite-mosaic, preserving only the external boundaries of the original shell. Even this would scarcely be shown, were it not for the brown staining which defines it, for the matrix is also in great part re-crystallised. A few foraminifera and crinoidal fragments are present, and numerous well-marked oolitic grains. These are built up by very many concentric coats of yellowish calcareous matter, either with or without an organic nucleus; and the minute fragments sometimes have a sufficiently definite orientation to give a rather vague black cross between crossed Nicols. Some of the grains contain more than one nucleus, as already noted in some other limestones.

NOTES—MAMMALIA.

Field Voles in North-East Yorkshire.—In July last the gardens attached to a gentleman's country residence near Northallerton were invaded from the surrounding grass lands by a swarm of Field Voles (*Arvicola agrestis*), which did much mischief generally. Their treatment of the strawberries, the whole crop of which they destroyed, was peculiar. They ripped the berries off the plants, most of them in an unripe state, and then left them piled up into heaps, as if for future consumption. Here, however, the instinct of the marauders must have failed them, as the fruit so treated rotted forthwith.—EDWARD H. SMART, M.A., Kirkby-in-Cleveland.

Seal at Flamborough.—The other evening a fine Seal (*Phoca vitulina*) was observed near to the South Landing.—MATTHEW BAILEY, Flamborough, Sep. 20th, 1890.

NOTE—BOTANY.

Ruppia rostellata in Cumberland.—During the last week in August, while paying a brief visit to some botanical friends at Black Dyke, about midway between Abbey Town and Silloth, I was informed that they had noticed *Ruppia maritima* growing in great plenty about a week previously in a tidal creek about a mile inland from Skinburness. This seaside village stands at the northern extremity of a headland at the mouth of the estuary of the rivers Waver and Wampool. It was proposed that in driving to Skinburness we should pass along the creek and examine the place referred to. Not far from Seadyke End we stopped, and there in a series of pools along the course of the creek we found the plant in great abundance, the pools being literally choke-full of the floating vegetation. We secured quite a large supply of specimens. On my return home a closer scrutiny satisfied me that the plants we had collected were really referable to *Ruppia rostellata*, and this opinion has since been corrobated by the authorities at Kew Gardens. This is the first recorded instance of its occurrence in Cumberland, so far as my information extends. By the same stream, but a little higher up, we gathered specimens of *Œnanthe fistulosa* and *Carex muricata*, both remarkably fine; while close to the village (Skinburness) we noticed *Gentiana amarella* and *Convolvulus soldanella*, the former very abundant.—WILLIAM HODGSON, A.L.S., Workington, Sep. 22nd, 1890.

FLOWERING PLANTS AND FERNS OF UPPER SWALEDALE.

WILLIAM WHITWELL.

Will Mr. Goodchild, author of the interesting paper on the Geological History of Upper Swaledale in the August 'Naturalist,' allow me to ask if he is quite certain about his identification of the following plants mentioned in his botanical list? I fear that some errors have occurred, the list including the names of several 'critical' or commonly-confused species.

Picris hieracioides. Range given in Mr. J. G. Baker's 'North Yorkshire' as 0-100 only; not named for Swaledale. *Crepis hieracioides* (= *succisæfolia*) is given in 'North Yorkshire' for Deepdale and Teesdale only, and as rare. Is not *Crepis paludosa* (not set down by Mr. Goodchild) really meant?

Leontodon hirtus. In 'North Yorkshire' 0–100 only, though named for Area 8. More probably the common *L. hispidus*; they are not easy to distinguish off-hand.

Hypochæris glabra. In 'North Yorkshire' as incognit. 'Reported from two or three stations, but on investigation they prove to be erroneous.' Query—*H. radicata*? *H. glabra* is a *quite rare* sand species; it is unknown to me and to many much better botanists than I am.

Sedum Rhodiola. 'On limestone crags to 2,000 ft.' This is a high *slate-rock* plant, common on the Coniston Fells and found at High Cup Nick, but not commencing till 1,800 ft. *S. telephium* var. *fabaria* is suggested; it is a lime-crag form.

Galium Mollugo. 'Common.' In 'North Yorkshire' as ascending to Keld and Thwaite; range, 0-350. Known in Wensleydale at 900 ft. Infrequent in West Yorkshire, except on the magnesian limestone. Does 'common' apply generally—to Upper Swaledale and to Lower?

Arctostaphylos Uva-ursi. 'Common locally.' As *Vaccinium Vitis-idæa* is not named, that also red-berried coriaceous-leaved species is doubtless intended. *A. Uva-ursi* is not in 'North Yorkshire' for the western hills, and the 'Flora of West Yorkshire' describes it as very rare.

Melampyrum sylvaticum. 'Common around Muker.' In 'North Yorkshire' for Teesdale only, but occurs in one spot in Wensleydale, above Whitfield Force. In 'Flora of West Yorkshire,' as very rare. *M. pratense* has often been recorded for it, and is known to occur in the Muker woods.

Veronica spicata. Not in 'North Yorkshire' or 'Flora of West Yorkshire.' *V. spicata* proper is an eastern counties form, *V. hybrida* western counties only. Query—luxuriant *V. officinalis*? *V. serpyllifolia* also occurs, but Mr. Goodchild has not recorded it.

Salix herbacea. Not known to Mr. Baker ('North Yorkshire,' p. 282). Grows on Cross Fell; now gone even from Ingleborough, according to Mr. F. A. Lees. Probably a stunted form of *S. repens* is intended.

Polystichum Lonchitis. 'Exterminated.' Never known in Swaledale. The *lonchitidioides* var. of *P. aculeatum* is found still in Cliff Gill, at the eastern base of Great Shunnor Fell, Mr. F. A. Lees informs me.

Hymenophyllum tunbridgense. *H. Wilsoni*, if either; that is in 'North Yorkshire' for Upper Farndale in Cleveland. And see notes in 'Flora of West Yorkshire,' p. 499, to the two species.

Symphytum officinale is native in North Yorkshire only within the 0-100 range according to Mr. Baker, and Mr. F. A. Lees treats it as rarely native in West Yorkshire; *Borago officinalis* is recorded by both as a casual only. Ought not, therefore, *may be* to be changed to *must be*, in Mr. Goodchild's observations?

NOTES AND NEWS.

The 37th Annual Report of the Nottingham Naturalists' Society, for 1889, contains, in addition to papers of more general scope, a useful one by Mr. James Shipman, F.G.S., on 'The Geology of Nottingham; Where and How to See it.'

An interesting feature of the Leeds meeting of the British Association was the series of geological photographs brought together by Mr. Osmund W. Jeffs, of Liverpool, of which a very large proportion were contributed by the Yorkshire Geological Photographs Committee, of which Mr. J. E. Bedford, of Leeds, is the Secretary.

With reference to Mr. Jarvis's query on p. 228, as to whether Squirrels have been known to eat fungi, Mr. T. D. A. Cockerell writes us that last year he saw a Grey Squirrel (apparently *Sciurus fremonti*) carrying off a large agaric by Willow Creek, Custer Co., Colorado, and that Dr. C. H. Merriam, to whom he related the incident, informed him (in litt., Nov. 8th, 1889) that the Squirrels of the *Sciurus hudsonius* group habitually eat the larger fungi.

We learn with the deepest regret of the death of Mr. James Backhouse, of York, which occurred on the 31st of August last, at the age of 65. Possessed of a hereditary taste for the natural sciences, he did much to promote their advancement in a variety of ways. To him in large measure—in conjunction with his father and afterwards with his sons—we are indebted for the discovery of many of the Teesdale rarities, and botanists are also indebted to him for his most reliable 'Monograph of the British Hieracia,' a difficult genus which few knew so well as he. Readers of our own journal will remember his most interesting paper on the Teesdale plants in the number for August, 1884.

THE FACULTY OF HOMING IN GASTROPODS.

H. WALLIS KEW, F.E.S., M.C.S.,
London.

THE Limpet (*Patella vulgata*) is known to return regularly to its scar after feeding. Three species of *Limax*—the Yellow, Great Grey, and Tree Slugs—and two of *Helix*—the Roman and Common Snails—have been observed to return to special places. It cannot be assumed, however, that every slug or snail seen crawling out in the evening has a fixed home to which it will return. Limpets, it would appear, do not wander far.

Mr. Romanes, in considering certain observations of Mr. Hawkshaw, concludes that the Common Limpet is able to remember direction and locality with precision, and thinks accurate memory of direction and locality by a snail for twenty-four hours is apparently indicated by an observation of Mr. Lonsdale.* A gastropod is thus accredited with the power of forming and retaining a mental picture of the special place or home to which it returns, and with memory of direction or the retention of a general impression of its bearings.† From the nature of the eyes it is hardly likely that the formation of this mental picture can be connected with vision; the eyes of the limpet for instance are described as examples of the most primitive kind of eye in the molluscan series,‡ and of course the mental image which this animal retains of its scar 'cannot be supposed to be comparable in point of vividness or complexity with the mental image that a horse retains of its stall, or a dog of its kennel; still such as it is, it is a mental image,' and betokens what Mr. Romanes defines as imagination in the lowest possible phase of its development.§

By some this view will doubtless be regarded as implying greater mental activity than can be reasonably expected in a group so low in the scale, and such will probably attribute the homing of limpets and certain slugs and snails to the existence of some mysterious additional sense, or will perhaps, be content to say, as Mr. Gosse has done in regard to *Patella*, that a gastropod returns to its home by means of an 'infallible instinct.'‖ A homing faculty of an extraordinary degree of development is exhibited by many domesticated mammals and birds, which have often been known to return to their homes after having been carried many miles by rail or otherwise in closed boxes or at night and set down in unknown districts.

* 'Animal Intelligence,' pp. 27-29.

† See Mental Evolution in Animals,' pp. 146, 153, etc.

‡ E. Ray Lankester, Art. Mollusca, Ency. Brit., xvi (1883), p. 648.

§ 'Mental Evolution,' p. 153.

‖ P. H. Goss, 'Mollusca,' 1854, p. 53.

In the absence of experiments of a definite nature, Mr. Romanes admits that nothing can be said in regard to this faculty except that it exists, yet he is not driven to Professor Häckel's conclusion that the same is due to an additional and inexplicable sense.* It is interesting to find that Sir J. Lubbock, after his experiments with Hymenoptera, agrees with Mr. Romanes that there is no sufficient evidence of such an additional sense in insects,† some of which, as is notorious, exhibit a wonderful way-finding faculty. Seeing how readily slugs, snails, whelks, etc., find their food, and that this is thought to result in great measure from the extreme delicacy of the sense of smell, it occurred to me that such animals might possibly be able also to scent their hiding-places, and follow their own trails, and find and track each other by smell. The spot frequented by a slug or snail would doubtless be bedaubed with the animal's slime and probably with fæces, and therefore might be scented at some little distance. Nevertheless, judging from the observations quoted by Mr. Romanes, and from the additional facts referred to below, there can, I think, be no doubt that a capacity for remembering locality and direction does exist in certain gastropods. It would, however, be impossible in some cases to say to what extent the animals are guided by smell; probably they often rely partly upon this sense and partly upon memory. That they may be guided home by the scent of the outward trail will have occurred to many; and an individual of the Great Grey Slug has been found to be in the habit of going out and returning along the same track. In the two instances, however, in which I have seen slime-trails which have started and terminated at the same place the outward and homeward journeys have been quite independent one of the other, and Mr. C. Ashford tells me that his observations tend to show that a snail, on returning to its hiding-place, is not bound by necessity to the old track. The space between a wandering limpet and its scar, and the scar itself, have been thoroughly washed many times with sea-water, but this did not interfere with the due return of the animal.

By returning from time to time to a fixed resting-place, a limpet is enabled to form a socket or scar having irregularities corresponding to the serrations in the edge of its shell, or to adapt the shell during growth to the uneven surface of hard rocks, and the security thus obtained must be of great importance to an animal much preyed upon by sea-fowl and other enemies, and which often has to resist heavy breakers. A terrestrial gastropod, if devoid of memory, might often fail to obtain shelter, and fall an easy prey to its diurnal

* 'Mental Evolution,' p. 95.

† 'Senses, instincts, and intelligence of Animals, 2nd ed., 1889, p. 271.

enemies. Those not protected by a shell, if they had to remain uncovered during the day-time, would be liable also to be scorched up by the sun; this might happen to slugs living upon walls, where, as is often the case, the holes in which they shelter are not numerous; and the same remark applies probably to those inhabiting precipitous rocks. We thus see that the faculty of homing is of great use as enabling the animals to escape destruction, and it is, perhaps, not surprising that the habit, together with the necessary power of memory, should have been acquired.

I have here put together such information as I have been able to collect, but this paper will be very incomplete. I suppose most naturalists of wide experience in the field and acquainted with the records of others will be able to call to mind additional facts. I have much pleasure in acknowledging indebtedness to Mr. Ashford, Mr. R. Standen, Mr. W. A. Gain, Mr. Sherriff Tye, and Mr. G. K. Gude, who have courteously furnished information and otherwise assisted, and to Mr. Romanes, who has obligingly looked over the manuscript.

SLUGS.

Probably most slugs resort to any convenient hiding-place near their feeding-grounds, and do not inhabit particular spots or homes. They congregate under pieces of board or tile placed upon the ground as traps in gardens,* as do snails in empty flower-pots. Mr. Gain believes that when a slug or snail goes out to feed it devours the first suitable food it finds, and retires in the morning to the nearest refuge, and he tells me that he has frequently left slugs and snails (*Zonites*) in comfortable quarters, intending to find them again when wanted, but, on re-visiting the spots, has generally been disappointed. On this subject, A. Binney says of terrestrial molluscs :—

> Numbers frequently resort to the same place, but this in the Helicidæ seems a mere matter of accident, while in the introduced species of Limacidæ it appears to indicate a gregarious habit, as they prefer to crowd together and lie in close contact with and upon each other. These last are said by some to occupy permanently the same retreat, but the assertion is probably incorrect. They often, and perhaps generally, remain in the immediate vicinity of the place where they procure their food, and hence they often resort to the same place of shelter; and as many of them have frequently been observed in the same place, they have been thought to be the same individuals. But when one set of individuals is destroyed, another soon takes their place, and whenever a new shelter is provided, by the accidental presence of fragments of wood in suitable situations, it is immediately resorted to by them. ('Terrestrial Air-breathing Molluscs of the United States, i (1851), 193).

There seems reason to believe that the Yellow and Great Grey Slugs (*Limax flavus* and *L. maximus*), when living between the

* 'Garden,' v (1874), 201; viii (1875), 306.

bricks of old walls, return to the same home from time to time, for suitable hiding-places can only be found between certain bricks. The slugs, on coming out, like limpets on rocks encrusted with fine sea-weed, are generally surrounded by their food, for I am convinced from repeated observations that, when living on walls, they subsist for the most part on the minute lichens which give the brick or stone its familiar grey and yellow-green tints. Thus they have not to wander far in search of food, and I believe in many cases they spend the greater part of their lives on the surface of the wall in the crevices of which they shelter, and in these they are probably hatched from the egg.* When no rain has fallen for a number of days, walls tenanted by Limaces become literally reticulated with crossing and re-crossing slime-trails. Of this I saw a striking instance while searching with a lantern over the face of a stone bridge crossing a stream near Louth; the stone was 'covered' with slime-trails, and there were more than a dozen slugs (*L. flavus*) within a very small area. These were immediately over the mud usually covered with water, and there was no herbage at the top of the bridge or anywhere near, except a little dried-up moss, but the stone was everywhere stained with minute lichens. On examining the slugs on walls and tree-trunks at night, they are often observed to be busily engaged in rasping off the encrustation of small lichens. That the animals may become acquainted with their surroundings is not, I think, in these circumstances, altogether improbable. By the London Road, at Louth, where large numbers of *L. maximus* live in a low wall built to retain a bank, I often watched the animals in the evening squeezing out from between the bricks.† On this particular wall many slugs crawl over the coping and away upon the bank beyond, yet as numbers come out almost every evening, it seems probable that they return to it.

There is evidence that slugs are *able* to return to special places both on walls and elsewhere. On a wall at Hampstead, I saw a number of slime-trails all of which appeared to start and terminate at a certain hole between the bricks. The trails were very sinuous, and crossed many times, so that all the journeys could not be made out; one journey to and from the hole, indicated by a distinct and continuous trail, could, however, be traced with certainty. In this case the slug had wandered about five feet from home. On some stone flags

* Mr. Gude, on inserting a knife between the bricks of a wall at Hampstead, impaled a very young *L. flavus*.

† The crevices from which these slugs emerge are often very small. In 1887, I saw an individual whose body, when crawling, measured fully 14 mm. across, come out from between two coping-tiles, the space between which was not more than 5 mm. Immediately before, a half-grown *Arion ater* had come out of the same crevice.

in a garden at Louth, I saw a slime-trail which started and terminated at a daisy-plant in the border of a flower-bed, showing that a mollusc had returned, after an excursion, to the spot from which it started. The animal—a large *L. flavus*—was at rest under the shelter of the leaves of the plant. The length of the trail was about 19 feet, but no part of it was more than four feet from the plant. On several successive mornings, Mr. Ashford saw a *L. maximus* (distinguished, amongst other things, by a peculiarly-shaped spot in the mantle) in the same chink between the rough timbers that shore up the upper sides of a well, and it was seen out on a foraging excursion during one of the intervening nights. The fact that access to the well was apparently to be gained only by an aperture made by the breaking away of one of the hinges of the lid, makes this a striking instance of the exercise of memory, if such be the guiding faculty. The slug was seen to come out at this aperture on the night on which it was observed abroad. It made straight for its food on gaining the open air, and was found next morning in its old retreat. An unusually bright yellow *L. flavus* was noticed by Mr. Ashford, morning after morning, beneath a small damp board upon a heap of dead leaves. On one, at least, of the intervening nights, it was absent, and was found in its usual place next morning. In his greenhouse at Swinton, Mr. Standen had a fine *L. maximus*, which lived in a niche in the wall near the floor, and regularly climbed up the wall and along one of the bench-supports to the plants above; 'from early spring to autumn this slug kept to the one track exactly, both going and returning.' The distance travelled, from the niche to the edge of the plant-stand, was about five feet. Mr. Standen also tells me that his friend Mr. Ray Hardy has for some months seen in his scullery a large *L. flavus* which regularly crawls to a sink from a hole near the water-pipe, and invariably keeps to a well-defined semi-circular track. Mr. Gain finds that the tree-slug (*L. arborum*) in captivity is in the habit of excavating a grave-like trench with perpendicular sides, its own length, and about an inch in depth, in which it lies. Either the original excavator or its companion, Mr. Gain adds, 'has occupied the trench on two occasions subsequent to its formation. On examination, I have failed to discover eggs in the trench or in the surrounding earth.'*

Mr. Sherriff Tye tells me that he has observed that in the greenhouse a slug will forage for nights in one spot, and return to the same hiding-place many times. The hole in a tree-pot, he says, is a favourite lurking-place for half-grown *L. maximus* and *L. agrestis*; they creep under the laths of the staging, which are a quarter of an

* W. A. Gain, 'Naturalist,' 1889, p. 56.

inch apart, and enter the pots from below. Mr. T. Baines, an experienced gardener, states that after feeding on the flowers of orchids, slugs retire to a favourite hiding-place, often at the opposite end of the orchid-house, and regularly return every night to the flowers.* During a considerable period, as observed by Mr. E. Stepp,† the colouring matter on some book-covers in a publishing-house was damaged almost nightly by slugs, which, as would seem probable, came from time to time from secure hiding-places. Mr. Gain informs me that *L. flavus*, as shown by its slime-trails, came nightly to feed upon cream in his cellar, and it must always have retired to a safe retreat, for most diligent search for it was made without success. It seems that the slug was not guided on the outward journeys solely by the scent of its food, and it would appear to have relied upon memory of locality and direction, for when the milk basins were moved to a distant part of the cellar, it was seen next morning 'wandering disconsolately' in the place where the basins formerly stood, and where it had been accustomed to obtain a meal from the cream. Mr. Gain suggests, however, that it may have been guided by its own trail or scent.

Concerning black slugs [*Arion ater*], a curious observation is recorded in the 'Zoologist' for 1845.‡ Two slugs, which had been placed in a vessel in a dark part of a room, and supplied with herbage, were neglected nearly a fortnight. On recurring to the animals, the observer provided them with a piece of raw beef, and placed them in another vessel. In the evening, he put the vessel whence they had been taken into its former place, and put the one in which they then were on a shelf above it. Next morning it was found that the beef had been deserted, and the slugs were at length discovered under the decaying herbage in the vessel in which they had been formerly kept! The observer suggests that perhaps they were led back to their former abode by the odour of the decaying herbage, and they may also have scented their slime and fæces. It is improbable that they sought the herbage as food, for they were provided with a supply of raw beef, of which they had made copious meals. Memory seems to be out of court, unless indeed the slugs had been in the habit of crawling out and returning to the vessel containing the herbage during the fortnight which elapsed before they were removed to another vessel; but this seems improbable, for slime-trails would have been noticed about the room, and this would have been mentioned in the account, which is a detailed one; yet, on the other

* 'Garden,' v (1874), 201-2.

† 'Science Gossip,' 1883, p. 163-4.

‡ James Hardy, 'Zoologist,' iii (1845), 1036-7.

hand, it seems strange that slugs—which I have always found restless in captivity—should have remained for a fortnight in a vessel which appears to have been uncovered. Mr. Gain is inclined to explain this observation by supposing that the former abode was found during a search for shelter, for, as he observes, slugs object to any retreat in which they cannot find covering.

SNAILS.

Mr. Ashford informs me that for a long time he felt sure that the homing faculty was possessed by snails from having observed the same individual of the common snail (*Helix aspersa*), recognised by its markings, occupying day after day the same spot as a mid-day retreat; the weather was favourable for foraging, and it had in all probability gone forth at nights for food.* In 1884, he put a colony of snails of this species to the test, and his experiments, which are of a very definite and satisfactory kind, together with facts observed in the same year by F. d'A. Furtado, fully confirm observations made several years previously by Mr. Standen, and prove beyond doubt that *H. aspersa* is able to find its way back to chosen quarters. Mr. Standen's observations, details of which he has kindly communicated, were made in 1872:—

I observed an immature *H. aspersa* in a hole about two inches [wide] by one inch deep, in the smooth brick wall (a newly-built piece) of a relation's kitchen-garden. This hole was four feet from the ground, and a piece of wood reared against the wall, with one end in a luxuriant bed of miscellaneous garden herbs and the other just touching the hole, was so thickly covered with slime tracks that my attention was drawn to it, and I requested that the piece of wood should be allowed to remain where it was until I could satisfy myself of its being the snail's ladder. On going to look in the evening, I found the snail had come down to feed, and in the morning it was in the hole again. This I repeatedly observed during the summer, and the snail attained maturity and hibernated in the hole, where I saw it the following Christmas. Afterwards it was destroyed by some animal, probably a mouse, which had mounted the ladder so long used by the snail as a road to its food. There were no other aspersas along this particular bit of wall.

Mr. Ashford has obligingly given me the following notes of his observations on *H. aspersa*:—

At noon on the 20th April, 1884 (I quote from memoranda made at the time), I searched for some individuals of this species in their usual corners of concealment, and after passing several clusters not numerous enough for my purpose, found

* It would be unsafe to assume the presence of the homing faculty in a Gastropod from the fact that individuals are noted day after day in the same place without due regard to the habits of the animal. Professor Herdman, for instance, had specimens of the small periwinkle (*Littorina rudis*) under observation for a month at a time on rocks in Puffin Island, and found no sign of their having moved. Six marked specimens were examined at intervals of from six to nine hours during three days and nights ('Life Lore,' ii (1889), 4).

a group of more than a dozen beneath a broken flagstone leaning obliquely against the greenhouse wall. Some were half grown, some adults, all cemented to the stone about nine to twelve inches above the ground. Scratching a ring upon the stone round the group, I procured some white paint, and having marked the shells of seven of the most robust, replaced the slab. At 10 p.m. the same evening three of the marked individuals were absent and could not be traced. The next morning all the seven marked shells were again fixed to the stone, and all were within the ring. Thus three, *at least*, had been out to browse and had found their way back. At 10 p.m. of that day five marked shells had started for their night's forage, of which two were traced, after much search, to a small jungle of young *Campanula pyramidalis* about six feet from the stone. At 10 a.m. of the 22nd, six marked individuals were beneath the flagstone, five within the ring and one an inch outside it. Thus, *at least*, four had found their way back. Whether the absentee had failed to return through breakdown of memory or from having wandered so far that it studied convenience and retired to some nearer corner, or had fallen a victim to an early thrush is doubtful. This trial appears to me conclusive. Results would have shown better if the register had been taken say an hour later at night, for it is probable all the seven went out to feed every night.

Mr. Ashford tells me that he has also established the fact that *H. aspersa* will cross a cinder-path to get to its favourite food and return by the same uncomfortable route to its original retreat, when it could easily have found new quarters in the immediate neighbourhood of its supplies; and this certainly looks like love of home!

The observations of Furtado are also upon *H. aspersa* and were made in 1884.* A house in which the observer lived, in one of the Azores, had a veranda with a flight of steps leading down to a little court or garden. One morning a snail was observed on the veranda lodged between a column and a pot in which a young banana was growing, and as one of the leaves of the banana had already been damaged, the mollusc was thrown down into the court. Next morning, however, it was recognised in precisely the same position as previously between the column and the pot, having found its way back over a distance of at least six metres. Furtado again threw it into the court, and watched the result. At 9 a.m. the snail was resting on the rail of the staircase having travelled about four metres. In the evening it resumed its march, and by 10 o'clock reached the top of the rail where it stopped; shortly after midnight it began to travel along the balustrade of the veranda, its course at first being very undecided. It was here turned aside by some fish-scales, but soon regained its previous direction, and as it approached the banana made straight for it. Near the column it fell in with a grooved washing-board, 'which it seemed to remember,' and 'advanced resolutely from the

* 'Instinct of Orientation in *Helix aspersa*,' Zool. Sec., Lisbon Mus., Oct. 27th, 1885; transl. Ann. and Mag. Nat. Hist. (5) xvi. 519-20.

board to the pot as over known ground.' The pot was climbed quickly, the snail mending its pace as it got nearer. For a little time, it wandered among the weeds in the pot, 'licking them frequently'; crawling at last upon the banana, it fed upon the leaf previously damaged. Next morning the snail, which had eaten but little of the leaf, was resting as before between the column and the pot. The author thinks it evident that the snail possessed a 'remarkable sense of direction,' and it must be admitted that his observations apparently indicate something very similar to the mysterious way-finding faculty before mentioned which many domesticated animals exhibit; but the snail had perhaps lived about the veranda and in the court for a long time, and may have possessed some knowledge of the whole locality, and it should be remembered that it may have been guided largely by scent. The observer states that he could readily detect the peculiar odour of the gnawed banana leaf at a little distance, and admits that the snail may have scented the plant, and that this may have helped to guide it, but adds that scent alone will not explain all the movements of the animal.

The celebrated observation communicated to Mr. Darwin by Mr. Lonsdale, upon the Roman Snail (*Helix pomatia*) has no direct bearing upon homing, but is interesting as recording the return of a snail to a special place.

> An accurate observer, Mr. Lonsdale, informs me that he placed a pair of land-snails (*Helix pomatia*), one of which was weakly, into a small and ill-provided garden. After a short time the strong and healthy individual disappeared, and was traced by its track of slime over a wall into an adjoining well-stocked garden. Mr. Lonsdale concluded that it had deserted its sickly mate; but after an absence of twenty-four hours it returned, and apparently communicated the result of its successful exploration, for both then started along the same track and disappeared over the wall ('Descent of Man,' pp. 262-3; see also Woodward, 'Manual,' p. 11; and 'Romanes, Anim. Intell.', p. 27).

Certain perforations in limestone rocks are said to have been produced by hibernating Helices by gradual erosion,* and have been regarded as the result of a 'constant resort for shelter to the same spot winter after winter',† but it cannot be supposed that each individual remembers and deliberately returns in the autumn to the perforation in which it hibernated during the previous winter, and Bouchard-Chantereaux observes 'il résulte de nos observations la certitude que les mêmes loges ne sont pas habitées chaque année, et que cette habitation n'est que le résultat du hasard qui dirige les individus tantôt d'un côté, tantôt de l'autre.'‡

* See, for instance, Proc. Geol. Soc., 1842; 'Ann. Sci. Nat.', 1861; 'Geol. Mag.', 1869 and 1870, etc.

† Harting's 'Rambles,' 1875, p. 78.

‡ 'Ann. Sci. Nat.' 4e série, Zool., xvi (1861), 208.

LIMPETS.

In 1831, Mr. F. C. Lukis* remarked upon the fact that the shell of the limpet is found to correspond exactly with the surface upon which the animal rests, and stated that if an individual be marked to avoid mistake, its regular return to its place of rest might be observed.

Mr. George Roberts, of Lyme Regis, recorded interesting observations in 1847†:—

> On the slope of a great cockle rock (higher greensand rock from Whitlands), at the end of the Cobb, is a basin-like depression, which is left partly filled with water. One fine day I climbed up and found in the basin and round about several small and a few middle-sized limpets. Above the level of the water (the basin) was a smooth place from which a limpet had not long before moved, as the spot was different in colour to the rock around; the shape was singular. Looking into the water, I saw several limpets there, and a good many little fæces of these creatures. I was not long in spying my friend, who was from home. I found him leaving the others and making his way steadily back to his habitat. I watched his course; he arrived, and I at once perceived a difficulty, which he made nothing of, viz., the getting adjusted. He slewed himself round, and fitted a little notch which he had to a small piece of projecting quartz with wonderful readiness. He was tight in a moment, ready to resist the heaviest breakers or any enemy. . . . I find this limpet descended daily into the little basin of water, met his fellows there, and duly travelled back before the tide came in, and fitted the notch to the piece of quartz as before described.

On a smooth surface out of the stroke of the breakers, according to this observer, limpets halt anywhere as their choice leads them.

Mr. J. Clarke Hawkshaw has attended to the habits of limpets on the chalk at Dover; he observes‡:—

> It must be of great importance to a limpet that, in order that it may ensure a firm adherence to the rock, its shell should fit the rock accurately; when the the shell does fit the rock accurately, a small amount of muscular contraction of the animal would cause the shell to adhere so firmly to a smooth surface as to be practically immovable without fracture. As the shells cannot be adapted daily to different forms of surface, the limpets generally return to the same places of attachment. I am sure this is the case with many; for I found shells perfectly adjusted to the uneven surfaces of flints, the growth of the shells being in some parts distorted and indented to suit inequalities in the surface of the flints.

In one case Mr. Hawkshaw noticed a clearing made by a limpet round a pedestal of flint on a sea-weed-covered block of chalk. This pedestal was rather more than one inch in diameter, and it projected so much that a tap from the hammer broke it off:—

> On the top of the smooth fractured surface of this flint the occupant of the clearing had taken up its abode. The shell was closely adapted to the uneven

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* 'Remarks on the locomotion and habits of the Limpet,' 'Loudon's Mag. Nat. Hist.,' iv (1831), p. 347).

† 'On the habits of the Limpet,' 'Ann. and Mag. Nat. Hist.,' xix (1847), 70-71.

‡ 'On the action of Limpets (*Patella*) in sinking pits in and abrading the surface of the chalk at Dover,' 'Journ. Linn. Soc., Zool.', xiv (1879), pp. 406-411.

surface, which it would only fit in one position. The cleared surface was in a hollow, with several small natural cavities, where the limpet could have found a pit ready made to shelter in; yet it preferred, after each excursion, to climb up on to the top of the flint, the most exposed point in all its domain.

The area of rock-surface which one limpet keeps clear of all but the youngest growth of sea-weed varies, according to Mr. Hawkshaw, from 8 to 14 square inches.

In 1883, Mr. David Robertson made a number of observations on the habits of the limpet, of which an account was published in 1885.* To ascertain the movements of the limpet in its natural haunts an iron arch was placed over the animal; a wire, let down through the arch, rested on the crown of the shell, so that when the animal left its place, the wire dropped on the rock. Observations were regularly carried on from the 21st of June till the 20th of August, and were made on different limpets and on different zones of the tidal belt. Near high-water mark the rocks were frequently covered with young balani, which surrounded the limpets closely. There was always a little bare space on one or other side of the animals, beyond which they were not seen to wander. In these cases the animal, after feeding, was always found close to the drop wire, as if endeavouring to get back to the exact spot it had left. Further down, where the rocks were smooth and clean, it was occasionally found that the limpets settled down a few inches from the spot which they had left, and again by another tide or two were back on their old site. A series of careful observations were made on a limpet kept in a glass jar, 6 inches deep and 9 inches in diameter. By means of thin wires let down through the perforated zinc with which the jar was covered, and of a gummed ticket placed on the outside of the glass, the position of the limpet from time to time could be registered.

I found that it would return once or twice to the same spot, then change to another, then return back again to where it had been at first. Sometimes it would settle on the exact spot it had left five or six days before, and once as far back as thirteen days. Generally it settled on the exact spot it had formerly occupied, yet occasionally it would be a little to the one side or the other. In most cases it came down on the site from above, and occasionally rested a little before it finally reached it.

Observations on this subject have also been made by Mr. J. R. Davis at the Scottish Marine Station, Granton, Edinburgh.† A number of limpets were marked with white paint, and corresponding marks made near their scars. The greatest distance from its scar at which a marked limpet was seen was about three feet. This distance,

* 'Notes on the Common Limpet,' Trans. Nat. Hist. Soc. Glasgow (n.s.), i(1885), p. 9-21.

† 'The habits of the Limpet,' 'Nature,' xxxi (1885), pp. 200-201.

though extremely rough and covered with barnacles, was re-traversed without difficulty. The animals made excursions from their roosting-places in any direction, so that no beaten tracks were formed. As the shape of their scar corresponds exactly with the shape of the shell, they invariably roost with their snout pointing in the same direction. This direction is, of course, only constant for individuals. The tentacles of two marked limpets, which were off their scars, were excised. One speedily found its way back; the other seemed confused for several days, but after that time was found at its own scar; this limpet was near home when the operation was performed. The space between a wandering limpet and its scar and the scar were carefully washed again and again with sea-water, but in spite of this the animal readily found its way home.

NOTES—ORNITHOLOGY.

Flamborough Bird-Notes.—This season, I am given to understand by the cliff-climbers, has been a very successful one. On the whole they have done remarkably well, having taken an immense quantity of sea-birds' eggs. This is not to be wondered at, as the birds increase in numbers every year. On Sept. 2nd a very fine specimen of the Wryneck (*Iynx torquilla*) was brought to me to be preserved, having been captured by Mr. David Atkinson, near the North Landing. On Sept. 9th, two Sabine's Gulls (*Xema sabinii*) were shot near the Smithie Buoy —one a splendid specimen. On Sept. 12th Mr. Saltfleet shot a Black Guillemot (*Uria grylle*), immature. To-day (Sept. 15th), Mr. George Emmerson shot other two Sabine's Gulls, also a Little Gull (*Larus minutus*).—MATTHEW BAILEY, Sept. 15th, 1890.

Since I wrote you, two more Sabine's Gulls have fallen to the last-named gun, and two Black Terns (*Hydrochelidon nigra*).—MATTHEW BAILEY, Sep. 20th, 1890.

Swallows' Nests.—The Swallows' nests described by Mr. Waite as built against a wall without any support, are only occasionally to be met with in this country, but in Western Germany I found that the Swallows *usually* built precisely such nests as Mr. Waite describes, the nests bearing some similarity to those of the House Martin, but being open at the top, and composed of less pure clay; a little fine hay being mixed with the clay, which moreover is not so thoroughly kneaded together by the Swallow as by the House Martin. If Mr. Waite will refer to the second volume of Mr. Seebohm's 'British Birds,' he will find the subject fully discussed at p. 174. Mr. Seebohm himself considers these unsupported nests to be the rule rather than the exception, on the continent.—H. A. MACPHERSON, Carlisle, Sept. 3rd, 1890.

Yellow Wagtail in Swaledale.—I notice in reading Mr. Goodchild's interesting list of avian occurrences in Upper Swaledale, in the August 'Naturalist,' that he makes no mention of *Motacilla raii*, the migratory Yellow Wagtail. In the spring of 1888, while staying for a few days at Muker, I found this beautiful species to be exceedingly common by the Swale. Any day I could find at least half a dozen pairs of them among the moist meadows within about a mile of Muker.—J. BACKHOUSE, Jun.

Spotted Redshank in Cumberland.—For some years past I have felt convinced that, given a knowledge of the right fly-line, we should find certain rare British birds annually recurring even in Western Britain. Prior to 1888 no specimen of the Spotted Redshank (*Totanus fuscus*) had been identified as shot on the Cumbrian coast for half a century. In 1888 we hit on the right fly-line. Hence a young bird was killed that year on August 18th. In 1889 a second was shot upon Sept. 5th. In 1890 a third was shot on Sept. 2nd. Yet the species is very rare with us.—H. A. MACPHERSON, Carlisle, Sept. 7th, 1890.

NOTES ON THE TREE SPARROW.

F. B. WHITLOCK,
Beeston, Notts.

I HAVE read Mr. Fawcett's paper on the Tree Sparrow in Durham with much interest, as I find the birds in his district differ very materially in their habits from our local birds.

I am surprised to read of the Tree Sparrow (*Passer montanus*) nesting in Durham so early as February and March, especially as numbers of them 'are only spring . . . visitants to this county, arriving here about the latter part of March and the beginning of April.' Are we to assume that it is the resident birds that breed so early, and that the later broods are the products of the spring visitors? If so, can Mr. Fawcett say with certainty that the Tree Sparrow generally rears two broods in a season, especially as the nests under observation were totally robbed of their contents at various times. May it not be that the supposed second broods were the result of a first (or even second) attempt at incubation being unsuccessful.

Mr. Fawcett observes that the House Sparrow (*P. domesticus*) is very common where the colony of Tree Sparrows exists in the Browney valley, and I must confess that when I read his paper I think he has been mistaken in some cases in his identity of the species. The fact of the Tree Sparrow nesting in the 'forks of branches, and amongst the branches . . . of planes, oaks, . . . and in hedges and bushes,' points more to the habits of the House Sparrow. In Notts, with rare exceptions, nests in dense bushes have proved to be House Sparrows' nests; and in the case of nests in the forks and branches of oaks, apple and pear trees, I have never known the rule to vary. Since writing my first paper, I have discovered a large colony of Tree Sparrows nesting in some small and very dense hollies, by the Midland Railway near Attenborough, but were it not for the old birds flying off, the nests would escape the observation of an ordinary passenger, so dark are the interiors of the trees. These nests all contained young in the middle of June.

With regard to the size of Tree Sparrows' eggs, Mr. Fawcett writes: 'The eggs in some cases smaller than those of its relative.' After comparing a large number of Tree Sparrows' eggs with those of its ally, I find that only large eggs of the Tree Sparrow equal small eggs of the House Sparrow; occasionally extreme measurements will overlap, but this is exceptional. In the case of the birds breeding at Attenborough, it was the smallness of the Sparrows' eggs taken

from the nests and brought to me that led me to the identity of the parent birds, which I subsequently confirmed. The disparity in size of the two species would lead us to expect that the average egg of the Tree Sparrow would be smaller than that of the House Sparrow.

The most interesting part of Mr. Fawcett's paper is the paragraph relating to the inter-breeding of the species. Mr. Fawcett truly remarks on the shyness of the Tree Sparrow, and one would expect some difficulty in noting such a fact as inter-pairing, but as his observations were almost constantly made during the breeding season, I hesitate in casting any doubt on the fact. I should, however, like to ask him if he has noted any disparity in the numbers of the sexes of either species, and also if he has observed this inter-pairing at any of the other colonies he mentions. In a private letter to me, the Rev. H. A. Macpherson inquired if I had ever met with a hybrid, and he also informed me that a supposed example had lately turned up in Scotland, but he seemed to look upon it as a great rarity.

I hope Mr. Fawcett will be able to confirm his notes by procuring an example or two. This should not be difficult, as he seems to have observed the inter-pairing on many occasions. If he is able to do so, we shall have almost as interesting a case of interbreeding as in the example of *Lanius excubitor* and *L. major*. I shall be happy to send Mr. Fawcett a series of local Tree Sparrows' eggs for comparison, if he cares to have them, and I trust he will take my criticism in as good part as it is intended.

Sept. 10*th*, 1890.

NOTES—ORNITHOLOGY.

Garganey in Cumberland.—An adult female Garganey (*Querquedula circia*) was shot on the coast of Cumberland on the 15th of August, 1890. Her plumage showed that she had recently nested, and her death was unfortunate. It is a rare species in the N.W. of England at all times.—H. A. Macpherson, Carlisle, Sept. 7th, 1890.

Nesting of the Cirl Bunting at Lofthouse near Wakefield.—W.E.C., in the 'Naturalist' for May 1890, says, in a footnote on the nesting of the Cirl Bunting:—'In the above communication we regret to observe that no mention is made of the bird, the most, perhaps the only, satisfactory means of identifying the ownership of the nests and eggs discovered. I may say both pairs of birds were carefully observed during the many times I watched them through the field-glass to discover the nesting-site. I have an excellent description of the birds in Mr. Howard Saunders' new work. The throat, ear-coverts, and lores being black, with the sulphur-coloured collar round the neck, were quite sufficient to convince me of the identity of the birds, or any other person who thoroughly knows the Yellow-hammer. There is as much difference in the plumage of the two birds as there is in any of the other Buntings. There is no doubt many birds have come to grief since the Preservation Act came into force that are never mentioned; I decline, therefore, to state what befell one of the male Cirl Buntings.—John Ward, Pymont House, Lofthouse, June 6th, 1890.

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For Sale.—Talbot's Birds of Wakefield, 2s. 6d. Address, Eds. Naturalist.

'NATURALIST' REPRINTS.

No. I.—**List of Land and Freshwater Mollusca of Lancashire,** by ROBERT STANDEN.

No. II.—**Bird-notes from Heligoland for the year 1886,** by HEINRICH GÄTKE, C.M.Z.S.

No. III.—**Heligoland,** by JOHN CORDEAUX, M.B.O.U. (with autotype plate of views of Mr. Gätke's garden).

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ON A COAL-SEAM IN THE BERNICIAN SERIES OF NORTHUMBERLAND, AND ITS BEARING ON THE THEORY OF THE FORMATION OF COAL.

G. W. BULMAN, M.A., B.Sc.,
Corbridge-on-Tyne.

The Bernician series of Northumberland corresponds with the Mountain Limestone of Derbyshire and the Carboniferous Limestone series of Scotland. In it several coal-seams of minor importance occur. Some of these are worked in the south-west and north of the county. Among the best known is the Little Limestone Coal, so called from its position in relation to that limestone.

The coal-seam in question occurs lower down in the series, and is one of the two known as Beadnell coals, from the name of the place near which they are met with. The coast section where the seam outcrops is a most interesting one, and has been carefully and minutely described by Prof. Lebour in the 'Transactions of the North of England Mining Institute.' It is the position of this seam with regard to the other rocks, and the bearing of this on the theory of the formation of coal, to which I now wish to call attention.

It has—like many of the coals in the Bernician series—its underclay, and *is directly overlain by a limestone.* On the theory of the terrestrial growth of coal, and subsidence of the land, the gradually sinking area on which the bed of vegetable matter had accumulated would necessarily pass through a shallow-water stage, when sand and mud would be deposited on the coal, before it reached the stage of deeper and clearer water required for the limestone.

A section not far from the one which contains the coal-seam shows the typical transition. A bed of sand, coarse in the lower part and becoming finer upwards, is succeeded by a thin clayey band with carbonaceous matter—an old mud, partly of vegetable origin—and then a limestone.

The presumable interpretation of this is as follows: a coarse sand-bed is accumulated near shore and in shallow water; the area sinks, and finer sand is deposited; it sinks still more, and fine mud only reaches it; finally it becomes deep and clear enough for limestone. The *coal-seam and fire-clay* occupy the same relative position as this clayey band with carbonaceous matter; they both *overlie a sandstone*, and *are overlain by a limestone.*

And there is a great difficulty in conceiving how any deposit of vegetable matter formed on land can be gradually lowered beneath the sea without suffering extensive denudation. This was brought vividly to my mind during a recent examination of the so-called submerged forest on the Norfolk coast. A little to the north of Hunstanton a very good exposure of it can be seen at low water. The peaty layer, with tree-stumps resting on clay, is much cut up by the sea, and really exists only in patches. If it were covered now and preserved from further denudation, it would form a coal-seam of isolated fragments, each a few square feet in extent. And, on the gradual subsidence theory, every layer of vegetable matter would be exposed for a time to the action of the waves between tide-marks. This, however, does not apply to the seams of the Coal Measures proper, which may have been formed in great land-locked areas, where the open sea was excluded. But for the Bernician series, with its numerous limestones, the open ocean is required.

The position, then, of this Beadnell coal favours rather the drift theory of the origin of coal. We may suppose the vegetable matter to have been laid down when the water became too deep and the area too far from land to receive even the fine sediment which formed its under-clay, and before it became fit for the formation of limestone.

This is in accordance with the views advocated by Mr. Goodchild, F.G.S., of the Geological Survey, in the Geol. Mag., Feb. 1890. Mr. Goodchild points out how the vegetable matter carried down by rivers will drift out to sea beyond the zones of ordinary sedimentation, and, sinking down, form layers of coal. Thus it would happen that a seam of coal would usually succeed a very fine-grained deposit. And this is what we actually find with most of our coal-seams.

M. H. Fayol, too, in his great work on the 'Coal-field of Commentry,' has shown that vegetable *débris* carried down by rivers is deposited in the quieter portions of the basins of reception, away from the influence of currents, and out of reach of even the finer sediments under normal conditions. M. Fayol asserts that all varieties of coal are formed thus directly from vegetable matter carried by water; and although we cannot accept so wide a generalisation, we must admit that he has proved his case for the coal of Central France, if any case can be proved by facts and reasoning.

For this particular seam of coal, then, I think some modification of the drift theory must be adopted. And if so, we must infer that the presence of an under-clay beneath a coal is not necessarily evidence of growth *in situ*, and, further, that the said under-clay is not always a terrestrial accumulation.

EAGLES IN THE NORTH OF ENGLAND.

Rev. H. A. MACPHERSON, M.A., M.B.O.U., Etc.,
Author of the 'Visitation of Pallas's Sand-Grouse to Scotland,' etc.

Having searched during several years, with very limited success, for old records of Eagles in the English Lake district, I had lately an opportunity of making a hurried examination of the pages of the 'Gentleman's Magazine. Herein I found several references, none of them relating to my own faunal area, and all describing the capture of birds at a distance from their breeding-grounds. The earliest relates to an Eagle captured in Kent in August 1734. The curious thing about this occurrence is that the Lord of the Manor claimed the bird; 'but 'twas afterwards demanded by the King's Falconers as a Royal Bird, and carried to Court.' The expanse of wings of this specimen was stated at 3 yds. 8 ins., an obvious exaggeration.

The next capture that I shall cite here belongs to Northumberland. '1751. Newcastle, July 27. Last week, as Sir Henry Gray, Bart., was fowling near Cheviott Hill, he shot a very large eagle, which had seized his dog in his talons, and was endeavouring to carry him off. The neighbourhood had been much damaged by this eagle, having lost lambs to the value of £ 6' (Gentleman's Magazine, xxi, p. 379).

Fourteen years later, we find another reference, to Durham. '1765. October. Thursday, 17. A Golden Eagle of an enormous size was shot at *Ryhope*, near Sunderland. It measured from the extremities of its wings, 7 feet 6 inches; from the bill to the tail, 3 feet; its largest claws, six inches and a half; and its heart nearly as large as that of a sheep' (Gentleman's Magazine, 1765, p. 490).

The last passage to be quoted for the North of England is less detailed. It refers to the year 1784, and states, under *November*, that 'In the course of the present month an eagle was shot in Lincolnshire, which measured from the tip of the wings, when extended, 7 feet 7 inches. It was a noble bird, and being hurt in the wing only, it was with difficulty subdued' (Gentleman's Magazine, 1784, p. 872).

The White-tailed Eagle certainly bred in the Lake district until the last years of the eighteenth century, and probably the Golden Eagle held out nearly as long. I lately interviewed an aged native of Keswick, a man of ninety summers. This old gentleman assured me that when he was a big lad, a pair of Eagles still nested on one of the mountains of the district.

Sept. 7th, 1890.

THE MONEY COWRY ON THE COAST OF CUMBERLAND.

Rev. CHARLES CRAWSHAW, M.C.S.,
Shipley, Yorkshire.

Upon the sandy beach between Seascale and the river Calder, the Money Cowry (*Cypræa moneta*) may be found in abundance. This shell (with a few *C. annulata*) occurs upon the high-water line left by the tide; and although visitors clear the ground every day, the succeeding tide renews the supply. In the course of a few days the writer collected about 600 shells, and nearly all of them in good condition for beached specimens.

The Money Cowry is known to the general public as a foreign shell, if not as the product of the Indian Ocean, and the appearance of it upon the Cumberland shore is locally explained by supposing that it has been introduced accidentally in a living state, and a thriving colony established in the sea at the mouth of the Calder. These shells have been found now for so many years that the popular theory tracing them to the adjacent colony gathers strength, while the true explanation becomes more and more obscure. Some of the residents, however, remember the wreck of the 'Glendowra,' in 1873. This vessel was a four-masted barque, homeward-bound from Manilla. Her cargo consisted of jute, sugar, and cowries; of the latter there were on board 600 bags, containing 2 cwt. each. The 'Glendowra' missed the port of Liverpool through an error in her course, and, in the fog which prevailed, ran ashore near Seascale. All the crew were saved, and the wreck, which could not be recovered, was subsequently removed by explosives.

I find, by counting the cowries in a given weight, that there would be in the 600 bags lost in the sea about 70,000,000 shells, a number sufficiently accounting for the continual supply cast up upon the shore, and also illustrating the amazing productiveness of this mollusc in its native place.

The best cowries come from the Maldive Islands, and are taken to Ceylon to be shipped for England, and thence are exported to Africa, chiefly by the river Niger. An inferior kind reaches this country via Zanzibar, and is sent to Lagos. One Liverpool firm transmits from 20 tons to 30 tons per annum.

NOTES AND NEWS.

We have to deplore the loss of John Hancock, whose death—at the age of 82—took place at Newcastle-on-Tyne, on the 8th of October.

NOTES ON THE FLORA OF WEST CUMBERLAND.

PERCY H. GRIMSHAW,

Elm Grove, Burley-in-Wharfedale.

WHILE spending my annual holiday this year at Seascale, a small watering-place on the coast of Cumberland, I took the opportunity of making a few notes on the flora of the district. My observations were made between May 31st and June 13th, so that I missed many plants, characteristic of the district, which bloom at a later period of the year.

The area over which I worked may be roughly bounded by a line drawn from St. Bees Head to Wasdale Head, thence up Pier's Gill to the summit of Scafell Pikes, down Eskdale to the village of Boot, then along the narrow-gauge railway to Ravenglass, and finally up the coast back to St. Bees.

Perhaps it will be as well to enumerate the principal geological features of this area. They are—(1) a narrow belt of Upper Permian sandstones running up the whole of the coast, and varying in width from two to about four and a half miles, with magnesian limestone at the base of the cliff at St. Bees Head; (2) adjoining this belt, the great mass of Silurian slates (extending over a great part of the Lake district); (3) various granites forming the strand at the foot of Wastwater, part of Scafell, and most of the hills around Eskdale; and (4) the sand-dunes which line the coast for a few miles N. and S. of Seascale.

Owing to the presence of marshy ground in the hollows of the sand-dunes the flora becomes nicely varied, and I was considerably surprised at the number of plants found there. I append the list (57 species in all):—

Ranunculus heterophyllus.
Ranunculus Flammula.
Ranunculus bulbosus.
Cochlearia officinalis.
Brassica monensis.
Viola palustris.
Viola canina.
Polygala vulgaris.
Silene maritima.
Lychnis diurna.
Lychnis Flos-cuculi.
Stellaria uliginosa.
Arenaria peploides.
Hypericum humifusum.
Geranium sanguineum var. prostratum.
Erodium cicutarium.
Genista tinctoria.
Ulex europæus.
Trifolium repens.
Trifolium dubium.
Anthyllis Vulneraria.
Lotus corniculatus.
Lathyrus pratensis.
Potentilla anserina.
Potentilla Comarum.

Rosa spinosissima.
Sedum anglicum.
Sedum acre.
Drosera rotundifolia.
Eryngium maritimum.
Galium verum.
*Valerianella olitoria.
Bellis perennis.
Achillea Millefolium.
Matricaria inodora var. maritima.
Cnicus palustris.
Hieracium Pilosella.
Leontodon hispidus.
Taraxacum officinale.
Sonchus oleraceus.
Erica Tetralix.
Armeria maritima.
Myosotis palustris.
Myosotis versicolor.
Calystegia Soldanella.
Veronica officinalis.
Veronica Chamædrys.
Euphrasia officinalis.
Thymus Serpyllum.
Plantago lanceolata.
Plantago Coronopus.
Atriplex Babingtonii.
Salsola Kali.
Orchis latifolia.
Habenaria bifolia (*not* chloroleuca).
Potamogeton natans.
Eriophorum angustifolium.

* This plant varied so much in character that I was at first completely puzzled with it. One specimen I obtained was in the form of a little tuft only about half an inch in height, and was so different from other plants of the same species that I could only be sure of its identity after examining it carefully under a strong lens.

Another interesting locality was the rocky bed of the river Calder near its mouth, exposed in many places owing to the lowness of the water. Amongst the stones and on the banks of the river occurred:—

Ranunculus aquatilis (sub-species not determined).
Ranunculus Flammula.
Cochlearia officinalis.
Lepidium campestre.
Stellaria graminea.
Sagina procumbens.
Lepigonum rubrum.
Claytonia sibirica (see remarks on this plant in general list).
Montia fontana.
Geranium molle.
Geranium Robertianum.
Erodium cicutarium.
Potentilla anserina.
Sedum anglicum.
Sedum acre.
Callitriche verna.
Apium graveolens.
Chrysanthemum Parthenium.
Primula veris (fruit).
Lysimachia nemorum.
Glaux maritima.
Myosotis palustris.
**Mimulus moschatus.*
Mimulus luteus.
Digitalis purpurea.
Veronica arvensis.
Veronica serpyllifolia.
Veronica Beccabunga.
Euphrasia officinalis.
Stachys sylvatica.
Plantago Coronopus.
Salsola Kali.

* This plant, the common scented Musk of cottage gardens, seems to be thoroughly well naturalised in this spot, which is far away from a habitation of any kind. I observed the same species in the same locality *seven* years ago, and during my last visit noticed two patches quite at a distance from each other, so that the plant is evidently spreading.

The flora of St. Bees Head, as noted in a single visit, included the following:—

Ranunculus bulbosus.
Cochlearia officinalis.
Polygala vulgaris (blue- and pink-flowered).
Silene maritima.
Lepigonum rubrum.
Geranium sanguineum var. prostratum.
Ulex europæus.
Ononis repens.
Anthyllis Vulneraria.
Lotus corniculatus.
Potentilla Tormentilla.
Alchemilla arvensis.
Cratægus Oxyacantha.
Sedum Rhodiola.
Sedum anglicum.
Conopodium denudatum.
Heracleum Sphondylium.
Hedera Helix.
Galium verum.
Galium saxatile.
Bellis perennis.
Achillea Millefolium.
Matricaria inodora var. maritima.
Hieracium Pilosella.
Leontodon hispidus.
Taraxacum officinale.
Jasione montana.
Armeria maritima.
Veronica Chamædrys.
Euphrasia officinalis.
Thymus Serpyllum.
Teucrium Scorodonia.
Plantago maritima.
Plantago Coronopus.
Rumex Acetosella.
Mercurialis perennis.
Dactylis glomerata.
Pteris aquilina.

The remainder of my observations are embodied in the following general list, and I may mention that the nomenclature adopted throughout all these lists is that of the 8th edition of the 'London Catalogue.'

Anemone nemorosa. In flower, Pier's Gill, June 13th.
Ranunculus Lenormandi. Near Strands. **R. Flammula.**
Ranunculus heterophyllus. R. acris. R. repens.
Ranunculus Sardous. Between Seascale and Drigg.
Ranunculus Ficaria. In flower, base of Lingmell, June 9th.
Caltha palustris.
Meconopsis cambrica. Beckfoot, Eskdale. Burnthwaite, Wastdale.
Chelidonium majus. St. John Beckermet. Seascale.
Corydalis claviculata. Boot. Muncaster.
Fumaria pallidiflora var. **Boræi.** Braystones.
Cheiranthus Cheiri. Calder Abbey.
Nasturtium officinale. Common.
Barbarea vulgaris. Santon Bridge.
Cardamine flexuosa. Stanley Gill. **C. pratensis.**
Cochlearia officinalis.
Hesperis matronalis. In gardens.
Sisymbrium Thaliana. Between Muncaster and Irton Road.

Sisymbrium officinale. Braystones. Gosforth. **S. Alliaria.**

Brassica monensis. Common on the coast. **B. Sinapis.**

Capsella Bursa-pastoris.

Lepidium campestre. Braystones. Gosforth. Drigg.

Viola palustris. Common. Just below the summit of Scafell Pikes.

Viola arvensis. Braystones. **V. canina.**

Viola lutea. Seascale. Drigg. Eskdale Green.

Polygala vulgaris. Common; blue-, pink-, and white-flowered forms all seen.

Silene Cucubalus. Seascale. **S. maritima.**

Lychnis diurna. L. Flos-cuculi.

Cerastium triviale.

Stellaria graminea. Braystones. Muncaster. **S. Holostea.**

Stellaria uliginosa. Drigg. Gosforth. Strands. **S. media.**

Arenaria trinervia. A. serpyllifolia.

Arenaria peploides. Common on the coast.

Sagina procumbens. Seascale. Muncaster.

Spergula arvensis. Seascale.

Lepigonum rubrum.

Claytonia sibirica. I came across this beautiful plant on the roadside between Seascale and Gosforth, and, on looking over the hedge, saw that it grew in an adjoining garden, and so was certainly an escape. The same species occurred in the bed of the river Calder, as will be seen on referring to the special list for that locality. *There* it was a long way from any garden, and the seed must evidently have been carried down by the river. The specimens were kindly identified for me by Mr. W. Botting Hemsley, of the Kew Herbarium.

Montia fontana. Kidbeck, near Wastwater.

Hypericum Androsæmum. Grounds of Calder Abbey. On railway-track between Muncaster and Irton Road.

Hypericum humifusum. Drigg. Boot. Muncaster.

Hypericum pulchrum. Gosforth. Kidbeck. Strands. Boot.

Hypericum hirsutum.

Tilia cordata.

Geranium sanguineum var. **prostratum.** Very abundant on the coast. Not seen inland.

Geranium sylvaticum. Wasdale Head. Near the Woolpack Inn, Boot.

Geranium molle. Common throughout the district.

Geranium dissectum. St. Bees. Ravenglass.
Geranium columbinum. Braystones.
Geranium Robertianum. Common. Slope of Lingmell.
Erodium cicutarium. Seascale. Braystones.
Oxalis Acetosella. Stanley Gill. Strands. In flower close under the summit of Scafell Pikes.
Ilex Aquifolium. Calder Abbey. Pier's Gill, thoroughly wild.
Acer Pseudo-platanus. A. campestre.
Genista tinctoria. Seascale.
Ulex europæus.
Cytisus scoparius. Beckfoot. Gosforth.
Ononis repens. Braystones.
Trifolium pratense. T. repens. T. dubium.
Trifolium procumbens. The true 'Hop Trefoil,' on the sand-dunes, Seascale.
Anthyllis Vulneraria. Braystones, etc.
Lotus corniculatus. Common.
Ornithopus perpusillus. This exquisite little Leguminous plant grew on rocks at Kidbeck, near the foot of Wastwater.
Vicia sepium.
Vicia angustifolia var. **Bobartii.** Pretty generally distributed.
Lathyrus macrorrhizus. Calder Abbey. Stanley Gill. Beckfoot.
Lathyrus pratensis.
Spiræa Ulmaria. Seascale.
Rubus Idæus. Stanley Gill. Wasdale Head. Muncaster.
Rubus fruticosus.
Geum urbanum. Common.
Fragaria vesca. Ripe fruit, Muncaster, June 11th and 12th.
Potentilla Fragariastrum. Base of Lingmell.
Potentilla Tormentilla. Common. Near summit of Scafell Pikes.
Potentilla reptans. Drigg. Braystones. **P. anserina.** Common.
Potentilla Comarum. Seascale.
Alchemilla arvensis. Braystones. Boot. Muncaster.
Alchemilla vulgaris. Strands. Wasdale Head.
Alchemilla alpina. Very abundant in Pier's Gill, and on Scafell Pikes.
Poterium officinale.
Rosa spinosissima. A very characteristic plant of the sand-dunes; not seen elsewhere. **R. canina.**

Pyrus Aucuparia. Pier's Gill.

Cratægus Oxyacantha. St. Bees Head.

Cotoneaster vulgaris. Calder Abbey, naturalised.

Saxifraga stellaris. Scafell Pikes. Lingmell Beck and Pier's Gill.

Saxifraga aizoides. Pier's Gill.

Saxifraga granulata. A pretty 'flore pleno' specimen found at St. John Beckermet.

Chrysosplenium oppositifolium. Stanley Gill.

Sedum Rhodiola. Top of Pier's Gill, abundant.

Sedum anglicum. Well distributed over the sea-ward half of the area.

Sedum acre. Braystones. Seascale.

Drosera rotundifolia. Common in the bogs.

Drosera intermedia. Eskdale Green. Foot of Wastwater.

Epilobium hirsutum. Seascale. **E. montanum.**

Circæa lutetiana. Stanley Gill. Beckfoot.

Hydrocotyle vulgaris.

Eryngium maritimum. Common on the coast.

Sanicula europæa. Seascale.

Apium graveolens. Braystones. Seascale. Muncaster.

Apium nodiflorum. Seascale.

Ægopodium Podagraria. Muncaster.

Pimpinella Saxifraga. Seascale. Gosforth.

Conopodium denudatum. Calder Abbey. Beckfoot. Strands. Seascale.

Myrrhis odorata. Braystones. Calder Bridge. Seascale. Boot.

Chærophyllum temulum.

Angelica sylvestris. Muncaster.

Heracleum Sphondylium.

Hedera Helix. Slope of Lingmell.

Sambucus nigra.

Lonicera Periclymenum. Gosforth. Muncaster.

Galium boreale. Lingmell Beck. **G. cruciata.**

Galium verum. Braystones, etc. **G. saxatile.** Common.

Galium Aparine. Beckfoot. **Galium palustre.**

Sherardia arvensis. Braystones. Calder Bridge.

Valeriana officinalis. Beckfoot.

Valerianella olitoria. Seascale.

Bellis perennis.
Achillea Millefolium.
Chrysanthemum Leucanthemum. Calder Abbey. Eskdale Green. Gosforth. Muncaster. Irton Road.
Chrysanthemum Parthenium.
Matricaria inodora var. **maritima.** Coast, Seascale.
Tanacetum vulgare. Seascale.
Senecio aquaticus. Muncaster. **S. vulgaris.**
Arctium minus. Santon Bridge.
Cnicus palustris.
Centaurea nigra.
Crepis paludosa. Seascale. Calder.
Hieracium Pilosella. Braystones. Seascale. Eskdale Green. Gosforth. Beckfoot. Muncaster.
Hieracium murorum. Between Seascale and Gosforth.
Hieracium maculatum. Near summit of Scafell Pikes.
Hieracium umbellatum. Calder Abbey.
Leontodon hispidus. Braystones. Beckfoot. Ravenglass.
Taraxacum officinale.
Sonchus oleraceus. Seascale.
Jasione montana. Braystones. Stanley Gill.
Campanula rotundifolia.
Vaccinium Oxycoccos. Eskdale Green. Muncaster.
Vaccinium Myrtillus. Stanley Gill. Lingmell.
Vaccinium Vitis-Idæa. Pier's Gill.
Calluna Erica. Beckfoot.
Erica Tetralix. Muncaster. **E. cinerea.** Kidbeck. Boot.
Armeria maritima. Common on the coast.
Primula vulgaris. In flower, Drigg, June 1st, and Beckfoot, June 5th.
Primula veris.
Lysimachia nemorum. Seascale. Calder Abbey. Stanley Gill. Strands. Santon Bridge. Ravenglass.
Glaux maritima. Seascale.
Anagallis arvensis. Muncaster.
Fraxinus excelsior.
Ligustrum vulgare.
Menyanthes trifoliata. Seascale.
Myosotis palustris. Seascale. Muncaster. Drigg.

Myosotis arvensis. Braystones. Eskdale Green. Gosforth.
Myosotis collina. Braystones.
Myosotis versicolor. Seascale. Kidbeck. Muncaster.
Calystegia Soldanella. Common on the coast.
Solanum Dulcamara. Seascale. Muncaster.
Verbascum Thapsus. Boot.
Linaria Cymbalaria. St. John Beckermet. Calder Bridge Calder Abbey. Boot.
Linaria vulgaris. Between Braystones and St. John Beckermet.
Scrophularia nodosa. Braystones. Wasdale Head.
Mimulus luteus.
Mimulus moschatus. See special list for bed of R. Calder.
Digitalis purpurea. Drigg. Kidbeck. Ravenglass. Pier's Gill.
Veronica arvensis. Calder Abbey grounds, etc. **V. agrestis.**
Veronica serpyllifolia. Calder Abbey grounds, etc.
Veronica spicata. Eskdale Green Station, naturalised.
Veronica officinalis. Seascale. Drigg. Gosforth. Boot. Muncaster.
Veronica Chamædrys. Seascale. Drigg. Calder Abbey. Stanley Gill. Strands. Beckfoot. Ravenglass.
Veronica Beccabunga. Drigg. Gosforth.
Euphrasia officinalis. Seascale. Drigg. Kidbeck. Muncaster.
Pedicularis sylvatica. Seascale. Foot of Wastwater. Beckfoot. Muncaster.
Melampyrum pratense. Stanley Gill. Eskdale Green. Boot.
Rhinanthus Crista-galli. Seascale. Muncaster.
Pinguicula vulgaris. Eskdale Green. Strands. Boot. Lingmell side. Common around Wastwater.
Lycopus europæus. Seascale.
Thymus Serpyllum. Seascale. Braystones. Drigg. Kidbeck. Beckfoot. Slopes of Lingmell.
Nepeta Glechoma. Seascale.
Stachys Betonica. Stanley Gill. Strands. Boot. Ravenglass.
Stachys sylvatica.
Galeopsis Tetrahit. Beckfoot.
Lamium purpureum. Seascale. Braystones.
Lamium maculatum. Boot. **L. album.** Calder Abbey.
Teucrium Scorodonia. Braystones, etc.
Ajuga reptans. Calder Abbey. Muncaster.

Plantago maritima. St. Bees Head. **P. major. P. lanceolata.**
P. Coronopus. Common throughout the whole length of the coast.
Chenopodium Bonus-Henricus. Cottage near Stanley Gill.
Atriplex Babingtonii. Common on the beach, Seascale.
Salsola Kali. Common on the beach, Seascale.
Polygonum Roberti. Seashore, Seascale. **P. aviculare.**
Polygonum Bistorta. Seascale. Calder Abbey. Gosforth. Boot. St. Bees.
Oxyria digyna. Common in Pier's Gill.
Rumex Acetosella.
Euphorbia Cyparissias. In a garden, St. John Beckermet.
Mercurialis perennis.
Ulmus montana. U. campestris.
Urtica dioica. Slopes of Lingmell.
Myrica Gale. Common in bogs on the top of Heron Crags, head of Eskdale.
Quercus Robur.
Fagus sylvatica.
Taxus baccata. Gosforth churchyard.
Pinus sylvestris. Well planted at foot of Wastwater.
Listera ovata. Between Drigg and Seascale.
Orchis latifolia. Muncaster.
Orchis maculata. Seascale. Strands. Drigg. Muncaster.
Habenaria bifolia. Between Drigg and Seascale. This was the true *bifolia*, distinguished from *H. chloroleuca* by being smaller generally, and having the anther-cells parallel, not diverging. The lateral sepals are also narrower, and the spur more slender.
Iris Pseudacorus. Muncaster. Seascale. Drigg.
Convallaria majalis. Plantation near Stanley Gill, probably not truly wild.
Allium Scorodoprasum. Braystones, only one plant seen.
Allium ursinum. Calder Abbey, etc.
Scilla nutans. Stanley Gill. Strands. Boot. Pier's Gill.
Luzula pilosa. Stanley Gill. **L. campestris.** Strands.
Luzula maxima. Seascale. Calder Abbey. Pier's Gill.
Potamogeton natans. Seascale.
Eriophorum angustifolium. Seascale. Eskdale Green. Santon Bridge. Beckfoot.
Anthoxanthum odoratum.

Alopecurus pratensis.

Cynosurus cristatus. Calder Abbey, etc.

Dactylis glomerata.

Briza media. Seascale.

Nardus stricta. Pier's Gill.

Pteris aquilina. Common.

Cryptogramme crispa. Boot. Slope of Lingmell. Lingmell Beck.

Lomaria Spicant. Stanley Gill. Santon Bridge. Slope of Lingmell.

Asplenium Adiantum-nigrum. Abundant between Braystones and St. John Beckermet.

Asplenium Trichomanes. Calder Bridge. Calder Abbey. Beckfoot. Santon Bridge, common. Boot.

Asplenium Ruta-muraria. Braystones. St. John Beckermet. Calder Bridge. Seascale. Gosforth.

Athyrium Filix-fœmina. Common.

Lastræa Filix-mas. Common.

Polypodium vulgare. Braystones. St. John Beckermet. Seascale. Calder Abbey. Beckfoot. Gosforth. Strands. Santon Bridge. Boot.

Phegopteris polypodioides. Pier's Gill and slopes of Lingmell, common.

Osmunda regalis. Having found this plant in a certain bog between Seascale and Drigg in 1883, I again made a careful search, and was rewarded by finding several plants, not in the bog, however, but in a dyke close by. At the last meeting of the British Association the fern was reported by the Committee for Investigating the Disappearance of Native Plants as *extinct*!

Equisetum arvense.

Lycopodium annotinum. In fruit, slope of Lingmell.

Lycopodium clavatum. Foot of Wastwater. Slope of Lingmell, in fruit. Muncaster. Lingmell Beck. On Irton Fell; here presenting a most curious appearance by spreading over a considerable area on the hill-side, in the form of large irregular rings of a yellowish-green colour.

Lycopodium alpinum. In fruit, slope of Lingmell and Pier's Gill.

NOTE—LEPIDOPTERA.

Crambus salinellus near Preston.—In the 'Naturalist,' p. 298, is a record of *Crambus contaminellus* from Preston. The exhibition of these specimens was made under the name of *contaminellus*, but the Preston species is *salinellus*.—J. W. Tutt, Westcombe Hill, S.E., Oct. 1st, 1890.

Naturalist,

NOTES—BIRDS.

Flamborough Bird-Notes.—Great rush of Woodcocks (*Scolopax rusticola*) has arrived on the Headland, Oct. 20th and 21st; forty shot.—MATTHEW BAILEY, Flamborough, Oct. 22nd, 1890.

Grey Phalarope in Cumberland.—A young Grey Phalarope (*Phalaropus fulicarius*) in mixed plumage, was shot on the coast of Cumberland on the 23rd of September. Although this Phalarope is much rarer in the north of England than on the south-coast, not a season passes without the occurrence of one or two specimens in some part of the north-west. This date, however, is rather early, October being the favourite month for its appearance, though in the great visitation of 1866, one was shot on our coast in August.—H. A. MACPHERSON, Carlisle, Sep. 24th, 1890.

Albino Greenfinch near Bradford.—On the morning of the 11th April I noticed a white Greenfinch (*Ligurinus chloris*) among a large flock of its own species. They were all in a field of newly-sown oats, which skirts Baildon Moor, and the Albino looked very conspicuous against the dark soil. I watched it for over two hours with my glasses, so I am certain of its identity. In the afternoon of the same day, when I returned, it was still about the same place; but though I have been on the lookout, I have not seen it since.—HARRY B. BOOTH, Frizinghall, Bradford, May 11th, 1890.

Turtle Dove at Lofthouse near Wakefield.—On May 21st I had brought to me to name a fine male specimen of the Turtle Dove (*Turtur communis*). The bird had been seen for some days previous to being captured making its home in the new Union Railway embankment, and feeding on turnip-seed in a field near Robin Hood, Lofthouse. After naming it, and pronouncing it to be of rare occurrence, it was left with me to be preserved, and is now in my possession. I cannot find another on record for this locality.—JOHN WARD, Pymont House, Lofthouse, June 10th, 1890.

NOTE—FISHES.

The Tope on the Coast of Cumberland.—A small specimen of the Tope (*Galeus vulgaris*), measuring nearly 17 ins. in total length, was captured on the Cumberland coast on Sep. 23rd, and sent to me for identification by one of the fishermen. I have no reason to think that this fish is of unfrequent occurrence on our coast. On the contrary, the Tope is probably an annual visitant to our waters, but so little attention has been paid to ichthyology on this coast that it may be convenient to record this fact.—H. A. MACPHERSON, Carlisle, Sep. 24th, 1890.

NOTES—MOLLUSCA.

Additions to the List of Mollusca of Malham.—I have taken the following species in addition to those mentioned by Mr. Roebuck in his list for the Malham district in the 'Naturalist' for September:—*Pisidium nitidum*, stream on roadside between Bell Busk and Malham; *Planorbis corinatus*, *P. contortus*, and *Physa hypnorum*, Pond near Bell Busk. I am rather surprised *Physa hypnorum* has not been met with, as in the pond in which I found it there were thousands. I have never seen it so plentiful anywhere else.—W. E. COLLINGE, Leeds, October 11th, 1890.

Deep Limpet 'Scars.'—Near Spanish Head, Port St. Mary, Isle of Man, are to be seen some remarkably deep limpet 'scars.' The rocks there are flat slabs of limestone, sloping very gradually towards the sea, which washes over them at every tide—often with great violence. The 'scars' in question are, in some cases, an inch deep, and the apices of the animals' shells are frequently below the level of the rock. The depth of the 'scars' is due, doubtless, to the exposed situation of the rocks, though I have never noticed such deep excavations in any similar situations. The shells (*Patella athletica*) are very striking, being large, of irregular shape, and very brilliantly coloured inside. I have taken specimens encrusted to the depth of half an inch with (I think) 'nullapore,' as are also the rocks themselves.—L. E. ADAMS, Penistone, Oct. 9th, 1890.

THE NEOCOMIAN CLAY AT KNAPTON.

G. W. LAMPLUGH, F.G.S.

We have practically no knowledge of the Lower Cretaceous beds in Yorkshire except what may be gathered from that one magnificent section of the Speeton Cliffs. Inland, the ground at the foot of the chalk escarpment where these beds should appear is covered deeply with drift and alluvium, so that for over sixteen miles nothing whatever of the 'solid' geology can be seen. At this distance from the coast, however, the gradual rise of the base of the chalk brings the underlying beds above the alluvial flat, so that, in the neighbourhood of the villages of Heslerton and Knapton, clay may be traced obscurely outcropping from below the Red Chalk.

Unfortunately, of this clay there has not been of late years a single open section. Forty or fifty years ago several shallow pits were worked in it, some of which yielded fossils which are still preserved. But these pits were already disused and obscure in 1869, when Prof. J. W. Judd examined them, though some indications of the character of the deposits still remained or could be gleaned from the inhabitants of the neighbourhood; and from data thus obtained Prof. Judd partially described the pits.*

The conclusion he arrived at was that these Knapton clays represented the lower part only of the Speeton series, from the 'Speetonensis-beds' downwards, and that the band of phosphaic nodules which occurred in one of the pits was equivalent to the 'Coprolite-bed' found between the Neocomian and Jurassic clays at Speeton.

The supposed absence of the upper beds of the Speeton series, and the presence of the 'Coprolite-bed' close under the base of the chalk, led to the deduction that in this neighbourhood the chalk passed unconformably across the lower members of the Neocomian clays, and then off them altogether. This view was clearly illustrated by a map, and by diagrammatic sections of the Wolds and Pickering Valley.

The result of recent researches at Speeton, however, raised some doubt in my mind as to the reality of the relationship thus set forth. Fresh evidence was sought for in the field, but as there are no new sections to replace those which have gone to decay, none was forthcoming. The broad fact was palpable enough, that the Chalk escarpment east and south of Malton rested upon the various members of the Jurassic formation in turn; but this in itself was no proof that the unconformity affected the Neocomian beds also, for these might just as reasonably be held to have disappeared through an overlap of the chalk upon the old pre-cretaceous slope. And that

* 'Additional Observations on the Neocomian Strata,' etc. Quart. Journ. Geol. Soc., vol. xxvi. p. 327.

this latter supposition is the more probable, I have since found evidence in another quarter.

Seeking to elucidate certain points in connection with the Speeton fauna, I recently re-examined the chief public collections of the Speeton Clay fossils; among others, those of the Museums of South Kensington, Jermyn Street, Cambridge, York, and Scarborough, which contain a large proportion of the local collections made when the Knapton pits were open. During this examination I took note of any fossil observed to bear a 'Knapton' label, with the following results:—

At South Kensington are certain specimens of Ammonites labelled *Amm. knaptonensis* Bean; these seem to be identical with the species occurring in the *Upper beds* (Zone of *Bel. semicanaliculatus*) at Speeton recognised as *Amm. deshayesii* Leym.

In the same collection a small tray labelled 'Knapton' contains, besides an example of the species just mentioned, one specimen of *Amm. planus* Phil. (probably *Amm. nisus* D'Orb.), which occurs at Speeton in the *Middle*, and perhaps also in the *Upper*, portion of the series, along with two small specimens of *Amm. noricus* Schloth., whose position at Speeton is in the lower part of the zone of *Bel. jaculum*.* With regard to the last-mentioned species, I have some doubt whether the Ammonites really came from Knapton, as they so closely resemble Speeton specimens.

At Cambridge (Leckenby Collection), and also at York, are specimens of a small Brachiopod in a different state of preservation from those usually found at Speeton. These are labelled *Terebratulina striata*, but are more probably *Terebratulina martiniana* D'Orb.,† which occurs near the top of the zone of *Bel. jaculum* at Speeton and probably also in higher beds.

In the Scarborough Museum there is a tablet of crushed bivalves stated to be from Knapton, which are probably *Pholadomya martini* Forbes, a shell with a wide range at Speeton, extending from the base of the zone of *Bel. jaculum* to the 'cement-bed' of the zone of *Bel. semicanaliculatus*.

These are the only Knapton fossils I could find,‡ but they are sufficient to show that some, at any rate, of the pits were opened in the upper members of the Speeton series, the occurrence of the highly characteristic *Amm. deshayesii under the MS. name of*

* See my paper in Quart. Journ. Geol. Soc., vol. xlv. p. 575, for description of Speeton Zones.

† I am indebted to Mr. J. F. Walker, M.A., for this determination.

‡ I am informed that a good collection of Knapton fossils was for some time in private hands, and was afterwards presented to some public museum. I have been unable to trace this collection, and should be very grateful for any information.

Amm. knaptonensis being quite convincing on this point, while most of the other species yield confirmatory evidence. None of the above-mentioned species occur in the lowest beds of the Speeton Clay, i.e., in the zone of *Bel. lateralis*.

Then, the presence in one of the pits of the layer of phosphatic nodules mentioned by Professor Judd can no longer be regarded as proof of the horizon being that of the Speeton 'Coprolite-bed,' since I have recently shown that these nodules are not confined at Speeton to *one* horizon, but are abundant at not less than *three* different levels; namely, at the base of the zone of *Bel. lateralis* ('*the* Coprolite-bed'), at the base of the zone of *Bel. jaculum* ('the Compound Nodular Band'), and in the passage-marls at the base of the Red Chalk.

Now, judging from the position of the seam at Knapton with respect to the chalk, and from the fossil-list as given above, I am inclined to think that if the Knapton bed is to be correlated with any of the above-mentioned bands of the Speeton section, it should be with the last-named, viz., that in the marls at the base of the Red Chalk.

Thus, an examination of all the evidence now available goes to show that the Knapton Neocomians represent chiefly the upper portion of the Speeton section, and that there is no proof of their supposed unconformability with the Chalk at this locality. It is nevertheless certain that the Chalk rests upon the upper members of the Jurassic only two or three miles further westward. It was suggested in my paper on the Speeton clays that the Neocomians may thin out and disappear against the old pre-cretaceous anticline which has its crest in the neighbourhood of Pocklington and Market Weighton (where the Chalk now rests upon Lower Lias), and that the Chalk passes off them by simple overlap, though overstepping the Oolites beyond. This view still seems to me the most probable one, but can scarcely be considered safely established until more positive evidence is forthcoming—and for this we must wait.

[An interesting confirmation of the view advanced by Mr. Lamplugh is furnished by the following passage from Young and Bird's *Geological Survey of the Yorkshire Coast*, published in 1822, when the Knapton pits were still open. 'In one of the clay pits at Knapton, we see the junction of the shale with the red and grey chalk. The clay, where it joins the chalk, is soft and plastic; and this also is the case with the lower part of the chalk. The two substances are partly blended together; the soft chalk, which occurs here of both colours, approaching to the state of red and grey clay; while the clay that is next the chalk is somewhat impregnated with calcareous matter, and is almost divested of its schistose quality.' (Op. cit. p. 58).—A.H.].

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The Foraminifera of the Red Chalk [a list of nearly eighty species, mostly from Speeton]. Journ. R. Micro. Soc., 1888, Part 1, pp. 383-385.

F. W. Clarke. **Yorks. S.E.**

The Shepard Collection of Meteorites Deposited in the [U.S.] National Museum by Prof. Charles Upham Shepard, jr. [includes: No. 6, which fell Dec. 13th, 1795, at Wold Cottage, Thwing, Yorkshire; weight 13·02 grammes]. Ann. Rep. Smithsonian Inst. for 1885-86, Part 2 (pub. 1889), p. 263.

C. T. Clough. **Northumberland and Cumberland.**

The Geology of Plashetts and Kielder (explanation of quarter-sheet 108, S.W.; New Series, sheet 7); Notes on the Cumberland portion by Hugh Miller [dealing mainly with Carboniferous rocks; these are described in order, fossil lists given, and notes on the associated igneous rocks by J. J. H. Teall; the Glacial beds are also treated of, with a list of foreign boulders met with]. Mem. Geol. Surv. England and Wales, 1889, 68 pages.

C. T. Clough. **Northumberland.**

The Geology of the Cheviot Hills (English side); explanation of quarter-sheet 108, N.E.; New Series, sheet 5 [deals chiefly with the Lower Old Red Sandstone porphyrites, the Carboniferous strata and contemporaneous basalts, and the intrusions of granite and porphyrite, with dykes of later age; also the glacial deposits, physical structure, scenery, etc., with bibliography and index]. Mem. Geol. Surv. England and Wales, 60 pages, 1888.

F. Clowes. **Nottinghamshire.**

Barium Sulphate as a Cement in Sandstone [at Stapleford and Bramcote Hills and the Hemlock Stone, about six miles west of Nottingham; analyses are given showing up to 50 per cent of Barium sulphate]. Proc. Royal Soc., 1889, vol. xlvi. pp. 363-368.

F. Clowes. **Northumberland S.**

Deposits of Barium Sulphate from Mine-water [at Harton, Newsham, and Jane Pit, Walker, all near Newcastle]. Proc. Royal Soc., vol. xlvi. pp. 368, 369; also in Rep. Brit. Assoc. for 1889, pp. 594-597 (1890).

T. R. H. Clunn. **Lanc. S.**

The Earthquake in Lancashire [on Feb. 10th; felt at Prestwich Asylum as two shocks, followed by gentle tremors lasting 20 or 30 seconds]. Nature, Feb. 21st, 1889, vol. xxxix, p. 390. [See also E. Carpenter, writing from Birkdale, Nat. Hist. Journ., 1889, vol. xiii. p. 32; and anonymous account in Research, March 1889, p. 150.

E. M. Cole. **Yorkshire.**

Sheffield Naturalists' Club [abstract of a lecture on the Geology of Yorkshire]. Research, Nov. 1889, p. 115.

E. Maule Cole. **Yorks. N.E.**

The Yorkshire Naturalists' Union at Robin Hood's Bay [and list of fossils by S. Chadwick]. Naturalist, Aug. 1889, pp. 227, 228, 232.

E. MAULE COLE. **Yorks. S.E.**

The Yorkshire Naturalists' Union at Kirkham Abbey. Naturalist, Nov. 1889, pp. 343, 344.

J. CORDEAUX. **Yorks. S.E.**

Shap Granite Boulder near Spurn. Naturalist, Dec. 1889, p. 355.

H. W. CROSSKEY. **Yorkshire, Lancashire, and Cheshire.**

Sixteenth Report of the Committee consisting of [11 names] appointed for the purpose of recording . . . the Erratic Blocks of England, Wales, and Ireland . . . [recording a large number of erratics in Yorkshire, and some in Lancashire and Cheshire]. Report Brit. Assoc. for 1888, pp. 101-124 (1889).

W. BOYD-DAWKINS. **Isle of Man.**

On the Geology of the Isle of Mann. Part I. On the Conglomerates of the South of the Island [treated of in four paragraphs, i, introductory; ii, description; iii, the source of the Pebbles; and iv, general conclusions]. Vannin Lioar, No. 1, Jan. 1889, vol. i. pp. 16-18.

W. H. BOYD DAWKINS. **Isle of Man.**

On the Clay Slates and Phyllites of the South of the Isle of Man; and a section of the Foxdale Mine [describing the passage of the clay-slates into phyllites, and giving an account of the Foxdale granite and the lead-mines]. Trans. Manch. Geol. Soc., 1889, vol. xx. pp. 53-56.

R. M. DEELEY. **Derbyshire.**

An Exposure of Middle and Newer Pleistocene Boulder Clay in Derby [in the Burton Road and Littleover Lane; resting on the Chalky Boulder Clay]. Geol. Mag., May 1889 (3), vol. vi. pp. 224-226.

C. E. DE RANCE. **Cheshire.**

The Geological Survey of Cheshire [a summary of work done in the Cheshire salt-district]. Trans. Manch. Geol. Soc., 1889, vol. xx. pp. 76-78.

C. E. DE RANCE. **Lanc. S.**

The Late Earthquake Shock [in Lancashire on February 10th]. Trans. Manch. Geol. Soc., 1889, vol. xx. p. 147.

E. DICKSON and P. HOLLAND. **Isle of Man.**

An Examination of some Volcanic Rocks of the Isle of Man [with petrological notes by Mr. F. Rutley; describing, with several analyses, an elvanite at Crosby quarry near St. John's (74·39 per cent. of silica); slate near the same, and also unaltered slate from Sulby; altered basalt from summit of Scarlett Stack (46·70 per cent.); gabbro at Rockmount (47·13 per cent.); dyke of 'anorthite-basalt' from near Langness; and various other dykes]. Proc. Liverp. Geol. Soc., 1889, vol. vi. part 1, pp. 123-131; Abstract in Research, May 1889, p. 206.

MISS JANE DONALD. **Yorks. N.W., and Cheviotland.**

Descriptions of some New Species of Carboniferous Gasteropoda [including *Murchisonia turriculata* from the base of the Yoredales near Askrigg, the first record in Britain, and *M. compacta* from about the Yoredale horizon in Cawledge Burn near Alnwick]. Quart. Journ. Geol. Soc., 1889, vol. xlv. pp. 619-625, plate xx.

D. EMBLETON. **Northumberland.**

On the Spinal Column of Loxomma Allmanni, Huxley [a detailed description]. Nat. Hist. Trans. Northumb., Durh., and Newc., vol. viii. 1889, pp. 349-356 and plate vi.

W. H. FITTON. **North of England.**

One of Nature's Gems [paper on Coal, read to Leeds Geol. Assoc.]. Research, August 1889, p. 45.

J. J. FITZPATRICK. **Furness.**

The Permian Conglomerate, and other Palæozoic Rocks to the North of Morecambe Bay [noting an outlier of the 'Brockram' at Rougholme, and describing the nature of this limestone conglomerate; an analysis of a dolomitised pebble gave carbonates of lime and magnesia in nearly equal proportions, and the matrix also was highly magnesian; the Carboniferous Limestone of Humphrey Head and the Bannisdale Slates of Cartmel also remarked]. Proc. Liverp. Geol. Soc., 1889, vol. vi. part 1, pp. 42-49.

H. FRIEND. **Northumberland.**

A Peep at the Roman Wall [with description of the sandstones near Haltwhistle and Greenhead and the 'whinstone' which has broken through and overflowed them]. Sci. Gossip, March 1889, pp. 50-52.

J. STARKIE GARDNER. **Yorks. N.E.**

A Correction.—Mesozoic Monocotyledon [stating that the object figured by the author in the Geol. Mag., May 1886, and described as a monocotyledonous fruit from the Yorkshire Oolites, has been found to be a volcanic bomb from Ascension]. Geol. Mag., March 1889 (3), vol. vi. p. 144.

I. E. GEORGE. **Isle of Man.**

Notes on some Manx Lavas [abstract of paper read to Liverpool Geol. Assoc.]. Research, June 1889, p. 233.

J. G. GOODCHILD. **Cumberland.**

The Physical History of Greystoke Park and the Valley of the Petteril, [pointing out especially the existence of three plains of denudation of different ages; first, that at the base of the Carboniferous; second, at the base of the New Red; and third, probably corresponding to the early Cretaceous. The apparent history of the Petteril valley is also traced]. Trans. Cumb. and Westm. Assoc., No. xiii. 1888, pp. 89-104: first printed in Penrith Observer, Aug. 9th, 1881.

J. G. GOODCHILD. **Westmorland.**

The Old Lakes of Edenside [pointing out the evidences of old lakes, now silted up, near Lazonby, Langanby, and Appleby]. Trans. Cumb. and Westm. Assoc., No. xiii, 1888, pp. 105-113: first printed in Carlisle Journal, Sept. 1883.

J. G. GOODCHILD. **Cumberland and Westmorland.**

The History of the Eden and of some Rivers Adjacent [pointing out the evidence of three plains of marine denudation in the district; tracing the history of the (Westmorland) Lune, Eden, Eamont, Greta, etc., and showing how their courses have, in many instances become diverted]. Trans. Cumb. and Westm. Assoc., No. xiv. 1889, pp. 73-90, and two plates.

J. G. GOODCHILD. **Cumberland and Westmorland.**

An Outline of the Geological History of the Eden Valley or Edenside [treating the stratigraphy of the district from the historical stand-point under the heads: I. Older Palæozoic Rocks, II. Post-Silurian Changes, III. Middle Old Red, IV. Upper Old Red, V. Carboniferous, VI. Post-Carboniferous, VII. New Red, VIII. Post-Jurassic Events, IX. First Appearance of the Mountains, X. The Glacial Period; the paper is illustrated by maps and sections, and has an appendix devoted to bibliography]. Proc. Geol. Assoc., vol. xi. 1889, pp. 258-284.

W. S. GRESLEY. **Derbyshire.**

Note on Further Discoveries of *Stigmaria* (? *ficoides*) and their bearing upon the question of the Formation of Coal-beds [giving reasons for supposing some *Stigmaria* specimens to be whole plants, not mere roots: two examples from Glapwell Colliery figured]. Midl. Nat., Feb. 1889, pp. 25-32, pl. 2.

T. T. Groom. **Cumberland.**

On a Tachylyte associated with the Gabbro of Carrock Fell in the Lake District [a basic glassy rock, consisting of a well-preserved, globulitic, and crystallitic base with spherical granules of quartz, spherulitic felspars, and grains of augite]. Quart. Journ. Geol. Soc., 1889, vol. xlv. pp. 298-303, and pl. xii.; abstract in Phil. Mag., 1889, vol. xxvii. pp. 205-206; in Geol. Mag., Jan. 1889, (3), vol. vi. p. 43; and in Neu. Jahrb., 1890, vol. ii. p. 92.

Alfred Harker. **Yorks. S.E.**

Petrological Notes on some Boulders from the Boulder-Clays of East Yorkshire [giving descriptions, with microscopic details of fifteen rocks, with the view of determining the sources of the boulders; forms Appendix C to Mr. Lamplugh's paper on Glacial Sections near Bridlington]. Proc. Yorks. Geol. and Pol. Soc., 1889, vol. xi. part ii. pp. 300-307.

J. C. B. Hendy. **Derbyshire.**

Notes on a 'Dumb Fault' or 'Wash-out' found in the Pleasley and Teversall Collieries, Derbyshire [brief abstract only]. Geol. Mag., Dec. 1889 (3), vol. vi. pp. 575, 576; Phil. Mag., Dec. 1889 (5), vol. xxvii. p. 493; Quart. Journ. Geol. Soc., 1890, vol. xlv., Proc., pp. 1, 2.

B. Holgate. **Cumberland and Westmorland.**

Leeds Geological Association [lecture on the geology of the neighbourhood of Keswick]. Research, Feb. 1889, pp. 136, 137.

T. V. Holmes **Cumberland.**

The Geology of North-West Cumberland [giving full descriptions, illustrated by maps and sections, of the Carboniferous, Permian-Triassic, and Liassic strata, and also of the Superficial Deposits—glacial drift, eskers, etc.]. Proc. Geol. Assoc., 1889, vol. xi. pp. 231-257.

T. V. Holmes and J. G. Goodchild. **Cumberland and Westmorland.**

Excursion to North-West Cumberland and Edenside [giving an account of the excursion made to that district by the Geologists' Assoc., Aug. 5th-10th, 1889]. Proc. Geol. Assoc., vol. xi. pp. lxxxv.-cii.

W. Howchin. **Northumberland.**

Additions to the Knowledge of the Carboniferous Foraminifera [describing several new species]. Journ. R. Micro. Soc., 1888, part 2, pp. 533-545 and plates viii.-ix.

W. H. Hudleston. **Lincolnshire and Yorks. N.E.**

A Monograph of the British Jurassic Gasteropoda, Part I. No. 3, pp. 137-192, pl. vii.-xi. [describing and figuring species of *Alaria*, *Cerithium*, and allied genera, many of them from the Lincolnshire Limestone of Great Ponton and Weldon and the Dogger and Sands of Blea Wyke]. Palæontographical Society, vol. xlii. (for 1888, pub. 1889).

J. S. Hyland. **Lancashire and Cheshire.**

Description of Specimens [of Triassic Sandstones, accompanying a paper on 'Slickensides' by Mr. T. Mellard Reade]. Proc. Liverp. Geol. Soc., 1889, vol. vi. pt. i. pp. 112-114.

P. F. Kendall. **Lancashire and Derbyshire.**

The History of our Local Rocks, Deduced from their Microscopical Characters. Ann. Rep. Manch. Microsc. Soc. for 1886, pp. 41-54 (pub. 1887).

P. F. Kendall. **Lancashire.**

On a Large Boulder found in Oxford Street [including an analysis of the rock and one of a rock from Coniston for comparison; the associated boulders include andesites, rhyolites, and volcanic agglomerates, besides the Buttermere granophyre, etc.]. Trans. Manch. Geol. Soc., 1889, vol. xx. pp. 140-145.

P. F. Kendall. **Lancashire, Derbyshire.**

The History of our Local Rocks deduced from their Microscopical Characters. Ann. Rep. Manch. Micro. Soc. for 1886, pp. 41-54.

G. W. Lamplugh. **Yorks. S.E.**

Glacial Sections near Bridlington: Part IV. [Gives a summary of previously-obtained results in the district, especially with reference to the 'Basement Clay,' and a description of the section now hidden by the new sea-wall which protects the 'Beaconsfield Estate'; the most important point is the tracing of the 'Basement Clay' northwards over Flamborough Head and probably to the Tees; appendices deal with the shells and the boulders contained in this clay.] Proc. Yorks. Geol. and Pol. Soc., 1889, vol. xi. part ii. pp. 275-300, with folding section (pl. xiii.).

G. W. Lamplugh. **Yorks. S.E.**

On the Larger Boulders of Flamborough Head: Parts II. and III. [giving particulars of a series of 142 boulders of more than a foot in diameter from Danes' Dyke Valley, and 110 from the shore between there and South Sea Landing, besides, for comparison, 500 from Tunstall near Withernsea; the last locality shows a much larger proportion of Secondary rocks than the others, and this is attributed to the high cliffs of the headland deflecting the lower layers of ice which chiefly carried the Secondary boulders]. Proc. Yorks. Geol. and Pol. Soc., 1889, vol. xi. pt. ii., pp. 231-239.

G. W. Lamplugh. **Yorks. S.E.**

Report of the Committee, consisting of . . . [7 names] . . . appointed for the purpose of investigating an Ancient Sea-beach near Bridlington Quay [a detailed account of the chalk cliff at Sewerby buried under the boulder-clay]. Rep. Brit. Assoc. for 1888, pp. 328-338.

G. W. Lamplugh. **Yorks. S.E.**

Report of the Committee, consisting of . . . [7 names] . . . appointed for the purpose of investigating an Ancient Sea-Beach near Bridlington [reporting no further excavation since the previous year]. Newc. Daily Chron., Sept. 18th, 1889; Rep. Brit. Assoc. for 1889, pp. 70-71 (1890).

G. W. Lamplugh. **Yorks. S.E.**

On the Subdivisions of the Speeton Clay [a careful, detailed working-out of the Speeton succession, with important corrections of the field-work of previous writers, and full fossil lists: the author finds in the clays a continuous series from Jurassic to Upper Cretaceous: notes are given on the zone-belemnites and other fossils]. Quart. Journ. Geol. Soc., 1889, vol xlv. pp. 575-617, with two folding tables: abstract in Geol. Mag., May 1889, (3), vol vi. pp. 233-234; and in Phil. Mag., 1889, vol. xxvii. pp. 429, 430.

G. W. Lamplugh. **Yorks. S.E.**

Bored Stones in Boulder-Clays [noting limestone boulders bored by *Pholas* and *Saxicava*]. Nature, July 25th, 1889, vol. xl. pp. 297, 298.

R. Law. **Derbyshire.**

On Bones of Pleistocene Animals found in a broken-up Cave in a Quarry near Matlock, Derbyshire. Trans. Rochd. Lit. Sci. Soc., 1888, vol. i. p. 15.

G. A. Lebour. **Northumbld., Durham, and Yorks. N.E.**

Official and Local Guide [for the meeting of the British Association at Newcastle-on-Tyne] Geology and Natural History [the geological part of this is a reprint of the 2nd edition of the author's 'Outlines of the Geology of Northumberland and Durham' (1886), to which is added a Supplement (pp. 149-151), containing notes on recent Survey Memoirs, on the Seaton Carew boring, and on the Team 'Wash' at Dunston, together with a list by Mr. R. Howse of the Carboniferous and Permian vertebrate fossils of the district (pp. 152-156)]. viii. and 219 pages, 8vo, and v. plates, Newcastle-on-Tyne, 1889.

J. Marley and G. A. Lebour. **Yorks. N.E., and Durham.**

Sketch of the Rise and Progress of the Cleveland and South Durham Salt Industry, and on the extension of the Durham Coalfield

[summarising the stratigraphy of the salt-bearing district and pointing out the thinning-out of the Magnesian Limestone to the west of Seaton Carew]. Newc. Daily Chron., Sep. 17th, 1889; Paper in full in Trans. Federated Inst. Mining Engineers.

J. E. MARR. **Lake District.**

On the Superimposed Drainage of the English Lake District [the Carboniferous rocks which now form a ring round the Lower Palæozoics, dipping outward, were probably deposited continuously over the region; subsequently, a dome-shaped elevation was formed, and a drainage-system radiating from the summit of the dome near Scawfell; this arrangement still subsists, although the Carboniferous and perhaps Secondary strata have been completely removed from the inner part of the district]. Geol. Mag., April 1889 (3), vol. iv. pp. 150-155.

J. E. MARR. **Cumberland and Westmorland.**

Dynamic Metamorphism of Skiddaw Slates [converted into a contorted mica-schist at various places along a belt from Melmerby to Roman Fell, and especially on the east side of Brownber]. Newc. Daily Chron., Sept. 14th, 1889; Rep. Brit. Assoc. for 1889, p. 568 (1890).

H. A. MIERS. **Cumberland.**

Calcites from the Neighbourhood of Egremont, Cumberland [giving crystallographic details of specimens, which include fine heart-shaped and 'butterfly' twins]. Mineralog. Mag., 1889, vol. viii. pp. 149-153.

G. H. MORTON. **Cheshire.**

Further Notes on the Stanlow, Ince, and Frodsham Marshes [a section near Stanlow Cottages showed Brown and Gray Estuarine Silt, 6 ft.; Upper Peat, 3 ft. 6 in.; Grey Estuarine Silt, 10 ft.; Lower Peat or Forest Bed, 2 ft.; Boulder Clay]. Proc. Liverp. Geol. Soc., 1889, vol. vi. Part 1, pp. 50-55.

G. H. MORTON. **Lanc. S. and Cheshire.**

Some Faults exposed in Shafts and Borings in the country around Liverpool [at Naylor's Bridge, Whiston, Green Lane, Borough Road, and Flaybrick]. Proc. Liverp. Geol. Soc., 1889, vol. vi. Part 1, pp. 115-123.

S. NIKITIN. **Yorks. S.E.**

Quelques Excursions dans les Musées et dans les terrains mésozoïques de l'Europe occidentale . . . [translated from the Russian; the writer compares the Speeton succession closely with the 'Volga beds' of Russia, and makes careful correlation of the sections]. Bull. Soc. Belg. Géol., 1889, vol. iii. pp. 29-58; see also short abstract in Quart. Journ. Geol. Soc., vol. xlv. p. 608.

A. PAVLOW. **Yorks. S.E. and Linc. N.**

Études sur les couches Jurassiques et Crétacées de la Russie: I. Jurassique supérieur et Crétacé inférieur de la Russie et de l'Angleterre [comparing the Russian succession with that at Speeton and at Spilsby, Claxby, and Tealby; a detailed section of the Speeton Neocomian by Mr. Lamplugh is appended, and several Yorkshire and Lincolnshire fossils described and figured]. Bull. Soc. Imp. Nat. Moscow, 1889, pp. 61-127, 176-179, plates ii-iv.; Abstr. in Geol. Mag., Nov. 1889 (3) vol. vi. pp. 520, 521, and further notice in Quart. Journ. Geol. Soc., 1889, vol. xlv. pp. 608, 609.

JNO. PHILIPSON. **Durham.**

Address to the . . . Tyneside Naturalists' Field Club . . . May 9th, 1888 [notes of field excursions: *Axinus dubius*, *Myalina haussmanni*, *Pleurophorus costatus* at Roker Dene, Oct. 7th, 1888; all the same at Whitburn]. Nat. Hist. Trans. Northumb. Durham, and Newc., vol. x. part 1 (1888), pp. 202 and 205.

SIR J. A. PICTON. **Lanc. S. and Cheshire.**

Notes on the Local Historical Changes in the Surface of the Land in and about Liverpool [especially as to the evidences of elevation in the estuary of the Dee and depression in that of the Mersey]. Proc. Liverpool Geol. Soc., vol. vi. part 1, pp. 31-42; Abstract in Research, Dec. 1888, vol. i. p. 97.

J. POSTLETHWAITE. **Cumberland, Westmorland, and Furness.**

Mines and Mining in the Lake District [giving an account of the Lower Palæozoic rocks of the district, with lists of fossils and notes on the igneous intrusions; an annotated list of minerals; and an account of the several mines, with a calendar of State papers referring to mining in the Lake District; also a geological map, plate of fossils, and numerous sections and plans of mines]. 101 pp., 8vo, Leeds, 1889. [2nd edition, enlarged.]

T. MELLARD READE. **Lanc. S. and Cheshire.**

The Physiography of the Lower Trias [suggesting that the Lower Triassic rocks were laid down in arms of the sea subject to strong tidal currents]. Geol. Mag., Dec. 1889 (3), vol. vi. pp. 549-558; Research, Oct. 1889, vol. ii. p. 78; Newc. Daily Chron., Sep. 13th, 1889; Rep. Brit. Assoc. for 1889, pp. 566, 567 (1890).

T. MELLARD READE. **North-Western Counties.**

The New Red Sandstone and the Physiography of the Triassic Period. Nat., April 1889, pp. 108-111.

T. MELLARD READE. **Cheshire.**

Saxicava Borings and Valves in a Boulder Clay Erratic [describing a boulder with burrows and shells of this mollusc found in the workings of the New Ferry Brick and Tile Co., and held by the author to prove the marine origin of the 'low-level boulder-clay' of Cheshire and Lancashire]. Nature, July 11th, 1889, vol. xl. pp. 246, 247.

T. ROBERTS. **Lincolnshire.**

The Upper Jurassic Clays of Lincolnshire [pointing out the occurrence between the Oxford and Kimeridge Clays of certain black selenitiferous clays of Corallian age; these beds are to be correlated with the Ampthill Clay of Bedfordshire and Cambridgeshire; they contain both *Gryphæa dilatata* and *Ostrea deltoidea*, and of the 23 fossils found, 22 are known Corallian forms; a map is given]. Quart. Journ. Geol. Soc., vol. xlv., pp. 545-559; Abstract in Geol. Mag., July 1889 (3), vol. vi. p. 334; Phil. Mag., Aug. 1889 (5), vol. xxvii. pp. 140, 141.

C. ROEDER. **Lanc. S.**

Some Further Remarks on the Oxford Street Section [noting the boulders met with in the Boulder Clay]. Trans. Manch. Geol. Soc., 1889, vol. xx. pp. 163-173.

J. SPENCER. **Yorks. S.W.**

On the Occurrence of a Boulder of Granitoid Gneiss or Gneissoid Granite in the Halifax Hard-bed Coal [from Shibden Head Pit; with a note on the rock by Prof. Bonney]. Rep. Brit. Assoc. for 1888, pp. 661, 662.

D. STUR. **Northumberland, Yorks. W., and Lancashire.**

Momentaner Standpunkt meiner Kenntnisse über die Steinkohlenformation Englands [correlating the various coal-deposits of the English Carboniferous series with those of Europe; also giving critical notices of species of fossil plants in the Newcastle Museum]. Jahrb. d. k.-k. Geolog. Reichsanstalt, 1889, vol. xxxix. pp. 1-20; Abstracts in Geol. Mag., Oct. 1889 (3), vol. vi. pp. 457, 458; and Neu. Jahrb. für Min., 1890, vol. i. pp. 296, 297].

A. NORMAN TATE [not signed]. **Derbyshire.**

Scientific Aspects of Health Resorts.—II.—Buxton [its geology described, with illustrations of Chee Tor, Chee Dale, and Mam Tor]. Research, Aug. 1888, pp. 20-22.

J. J. H. Teall. **Northumberland.**

The Amygdaloids of the Tynemouth Dyke [showing that some of the vesicles were filled by interstitial matter before the final consolidation of the rock]. Geol. Mag., Nov. 1889 (3), vol. vi. pp. 481-483 and pl. xiv.; abstr. in Newc. Daily Chron., Sep. 14th, 1889, and Rep. Brit. Assoc. for 1889, pp. 572, 573 (1890).

A. Timmins. **Lanc. S.**

Notes on a few Borings and the Base of the New Red Sandstone in the neighbourhood of Liverpool [giving details of borings at Halewood, Prescot, Eccleston, Gateacre Bridge, Knowsley, Kirkby, and Hale, with twelve analyses of probably Permian marls and sandstones]. Proc. Liverp. Geol. Soc., 1889, vol. vi. part 1, pp. 56-68; also in Rep. Brit. Assoc. for 1889, pp. 76-80 (1890).

W. Topley. **Northumberland and Durham.**

The Work of the Geological Survey in Northumberland and Durham [an excellent summary of the geology of this region, including the latest conclusions of the Survey Officers with regard to the grouping of the Carboniferous rocks of Northumberland]. Newc. Daily Chron., Sep. 19th, 1889; also Rep. Brit. Assoc. for 1889, pp. 597-600 (1890).

W. Topley. **Lancashire and Durham.**

Report of the Committee, consisting of . . [16 names], appointed for the purpose of inquiring into the Rate of Erosion of the Sea-coasts of England and Wales . . . [including notes on the coast from the Wyre to the Ribble by A. Dowson, and from the Tyne to the Wear by H. Bramwell]. Report Brit. Assoc. for 1888, pp. 898-933 [904-907].

W. Upham. **Northern Counties.**

The Work of Prof. Henry Carvill Lewis in Glacial Geology [describing Lewis's researches, tracing the 'terminal moraine' of the great ice-sheet across Northern England, and his theory of the lacustrine deposition of much of the boulder-clays of Yorkshire and Lincolnshire]. Geol. Mag., April 1889 (3), vol. iv. pp. 155-160.

J. F. Walker. **Yorks. N.E.**

On Oolitic Brachiopoda new to Yorkshire [16 additions to the list given in 1876: they include *Discina* (1 species), *Thecideum* (1), *Terebratula* (3), *Waldheimia* (8), and *Rhynchonella* (3)]. Report Yorks. Phil. Soc. for 1888, pp. 37-40; pub. 1889.

Arthur H. Watson. **Cumberland.**

Cavern Formation [in a field at Brigham]. Nat. Hist. Journ., Nov. 15th, 1888, vol. xii. p. 207.

W. Watts. **Lancashire.**

Erratic Boulders and Boulder Clay in the Castleshaw Valley [the boulders including andesites and agglomerates probably from the Borrowdale Series, with Silurian grits, certain syenites, etc.]. Trans. Manch. Geol. Soc., 1889, vol. xx. pp. 265-268.

A. Smith Woodward. **Yorks. S.E.**

Palaeontology in the Malton Museum [with special reference to the collection of fossil fish-remains]. Geol. Mag., Aug. 1889 (3), vol. vi. pp. 361-363.

Matsujiro Yokoyama. **Yorks. N.E.**

Jurassic Plants from Kaga, Hida, and Echizen [three provinces on the west coast of Japan; correlating the flora with that of the Inferior Oolite of the Yorkshire coast]. Journ. of Coll. of Sci. of Imp. Univ. of Japan; also Bull. Geol. Soc. Japan, Part B, 1889, vol. i. pp. 1-10.

SAUNDERS' MANUAL OF BRITISH BIRDS.

An Illustrated Manual of British Birds. By HOWARD SAUNDERS, F.L.S., F.Z.S. 8vo., pp. xl., 754; with illustrations of nearly every species. London: Gurney and Jackson, Paternoster Row, 1888-89.

Those who may desire to possess a thoroughly reliable, handy and convenient book of reference cannot do better than obtain a copy of Mr. Howard Saunders' 'Manual of British Birds.' The greatest possible praise is due to our author for having successfully brought together, and condensed with so much pains and labour, within the short space of exactly two pages (including the engraving), so much information, to date, in connection with the 367 birds, considered by him as fairly entitled to be included in the British list, and we think a very wise discretion has been exercised in omitting certain New World Passeres which labour under the suspicion of having reached our shores with an assisted passage.

Considering the excellence of the work as a whole, and the immense amount of material worked up, the comparatively low price, putting it within reach of all classes, at which it has been brought out is remarkable. This is probably due to the fact that the publishers own the blocks which were originally used for the illustration of the four editions of Yarrell's British Birds. Several entirely new wood-cuts, of recent additions to the British avi-fauna, now appear for the first time in the present Manual, these being the Isabelline, Black-throated and Desert Wheatears, the Barred Warbler, Wall-creeper, Needle-tailed Swift, Lesser Kestrel, Kildeer and Sociable Plovers, and Mediterranean Black-headed Gull; while new and improved engravings take the place of those of the Marsh Harrier, Goshawk, Merlin, and Great Auk.

The scientific arrangement and sequence mainly agrees with that already adopted by a Committee of the British Ornithologists' Union, in their list of British Birds published in 1883, and in the introduction to the volume the author has given a synopsis of genera, which occupies about thirty pages of closely printed matter; this will be found of great use in assisting the student to ascertain the class to which any bird belongs, the species being then readily diagnosed by a reference to the text. The only fault we have to this systematic sketch is that there appears to be an unnecessary multiplication of genera, where, as in some cases, the special distinctions are so slight as to scarcely warrant separation.

We are glad to find that so much space has been given to geographical range; this is a subject which is daily growing in importance, so closely connected is it with some of those higher scientific problems relating to the original dispersion of birds over the

globe and the differentiation of species and races, as well as the laws which govern migration. As bearing more directly on this latter subject the three maps included in this work will be found of much use for reference. These are a Bathy-orographical map of the United Kingdom and the groups of islands, a similar map of Europe, and the North Polar Chart.

The author has not failed to point out, so far as his very limited space has permitted, the most obvious points of distinction between closely allied representative species and races, so that an ornithologist can have no difficulty in correctly diagnosing any bird which he may happen to come across. In every case also, where possible, the call-note and song of each species is given, the most ready, and often the only way of distinguishing a bird in a wild state.

The structural character and situation of the nest, number and colour of eggs, habits and food are all briefly and clearly described, with a concluding paragraph descriptive of the male, female and young.

In fact the whole of the 754 pages of the volume will be found a storehouse of information on its special subject, and we have no hesitation in saying that all who care in any degree for the study of birds will heartily thank Mr. Saunders for his most excellent work, and in doing so wish for more. We can only hope that it may shortly be followed by a companion Manual dealing with such species belonging to the Western Palæ-arctic region, which so far have not been recognised in the United Kingdom.

NOTES—ORNITHOLOGY.

Montagu's Harrier in Westmorland.—This Harrier (*Circus cinereaceus*) is much rarer in the north of England than in the eastern and south-west counties. It has occurred in Cumberland, and also on Walney Island, but I have never yet examined an example killed in Westmorland. A friend of mine, who has lately been shooting near Burgh, reports to me that an example of this Harrier was killed in that district on September 15th. He saw the bird brought into the house where he was staying, by the keeper who had trapped it.—H. A. MACPHERSON, Carlisle, Sep. 24th, 1890.

Swallows' Nests.—I do not think the site mentioned by Mr. Waite can be called uncommon in this country, although I must admit that it is more common abroad, merely, I presume, because other sites are less abundant. I remember, when a boy, taking Swallows' eggs from nests built under the eaves of the village church, in precisely similar situations to those of Martins, and I know of a wooden shed in a marsh in Kent which always has a nest on its walls. In barns, cow-sheds, railway stations, etc., the nests are usually (but not always) affixed to the rafters without support.—J. YOUNG, 64, Hereford Road, Bayswater, London, Oct. 3rd, 1890.

Storm Petrel at Howden, Yorks.—I received this morning from Mr. H. Smith, Thorpe Hall, Howden, a Stormy Petrel (*Procellaria pelagica*) found by him yesterday. In all probability it was killed by the telegraph wires. Two occurrences of this species have been reported previously near here.—THOMAS BUNKER, Goole, Oct. 20th, 1890.

No. 185. DECEMBER 1890.

THE NATURALIST:

A

MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.

CONDUCTED BY

WM. DENISON ROEBUCK, F.L.S.,
Sunny Bank, Leeds.

WITH THE ASSISTANCE IN SPECIAL DEPARTMENTS OF

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The NATURALIST.

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For Sale.—Talbot's Birds of Wakefield, 2s. 6d. Address, Eds. Naturalist.

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THE TREE SPARROW IN COUNTY DURHAM.

J. W. FAWCETT,
The Grange, Satley.

In answer to Mr. Whitlock's call, in the October number of 'The Naturalist,' for further particulars of the Tree Sparrow (*Passer montanus*) in the county of Durham, I have much pleasure in adding the following to my notes in the September part.

The Tree Sparrow in Durham is a local resident, but, though we have many staying with us all the year round, others arrive as spring visitants; in fact, nearly all our resident (twelve month round) birds are partly migratory, i.e., immigrant and emigrant. The earliest date I know of for the spring visitant Tree Sparrow arriving in this country is March 10th. The bird nests early, the time varying according to the state of the weather; if the spring be fine and open it may happen to be the end of February and the month of March; if, however, it is otherwise, the end of March or commencement of April may be soon enough for the Tree Sparrow to commence housekeeping. Whether it be the end of February or the months of March or April that the birds commence to build and eventually rear their young, they still hatch and bring up a second brood in June and July, or may be the first half of August; at least, such is my opinion, and I have watched the movements, habits and manners of the greater part of our British birds in no small measure. Not only do the resident birds bring up their first brood during the months above named, but also the spring visitants, though Durham, I must confess, does not receive them in very great numbers, and they (the latter) are, as might be supposed, the later of the two (residents and visitants) in getting their first broods to be able to care for themselves, though they generally commence nesting soon after settling in the county, and hence seem to lose little time.

I am not mistaken in my remarks anent the breeding (and inter-pairing) of the two species, for I know the two distinct species very well, and positively assert that what I have said was really the case in 1880, 1881, and 1882. Since the latter date I have not been in that locality, and cannot venture to say that things are now what they were then. Though I know that the Tree Sparrow is, or has been, found in colonies at the places named in page 277 of 'The Naturalist' for this year, the Browney Valley (Baxter Wood) one has, so far, been the only one whereat I was able to make such close observations as I did, and the only one where I have known the two species to inter-pair and inter-breed.

Mr. Whitlock's request to obtain a hybrid is too late for this year (supposing that they still inter-breed); and as for next year's birds, we shall have to wait. His remarks on the Tree Sparrow's eggs are quite correct for the average. I have had some which measured $\frac{7}{8}$ths of an inch long by $\frac{7}{10}$ths of an inch wide, and others as small as those of the Robin.

Since writing the above I happened to be in the vicinity of Baxter Wood, and visited the place where the Sparrows (House and Tree) nested so commonly in 1880, 1881, and 1882, but, alas! time had wrought many changes during the intervening seven years, several of the trees having disappeared; of the remaining ones, one (an ash clad with ivy) alone was one of the original trees, whilst the birds, I found, had emigrated to some other locality. Unless I can come across another colony where the birds inter-breed near here, I shall be unable to try and obtain a hybrid.—24.x.90.

NOTES—ORNITHOLOGY.

Flamborough Bird-Notes.—I have two more Sabine's Gulls (*Xema sabini*) to report. One was shot October 7th, South of the Headland; the other on the North, October 13th. Quantities of Sea Gulls and Kittiwakes (*Rissa tridactyla*) have been seen passing the Headland for several days previous to the storm now raging, which is not an unusual occurrence on the approach of a storm.—MATTHEW BAILEY, Flamborough, October 16th, 1890.

Shore-Lark on Walney Island.—Some months ago allusion was made to the presence of the Shore-Lark (*Otocorys alpestris*) on the coast of Cumberland. It may be interesting to add that a male Shore-Lark was shot on Walney Island in October last, and sent to the writer for his identification. When Prof. Newton wrote his account of the Shore-lark for the fourth edition of Yarrell, this species was supposed to be almost unknown in the West of England. Mr. Mitchell, however, records several 'Lancashire' occurrences in the 'Birds of Lancashire.'—H. A. MACPHERSON, Carlisle, Nov. 6th, 1890.

The Grey Phalarope in Cumberland.—The Grey Phalarope (*Phalaropus fulicarius*) to which Mr. Macpherson alludes as having been shot in Cumberland in August 1866, was shot on the 24th of that month, and identified by Mr. J. Watson, of Carlisle. Out of 235 Phalaropes killed that year, this was the earliest but one, the earliest of all having been shot at Deal on the 20th. The real migratory movement did not set in until September 10th, on which day three were shot; on the 12th, five; on the 14th, six; on the 15th, twenty-two; and after that they were common.—J. H. GURNEY, Keswick Hall, Norwich, Nov. 4th.

Notes on the Tree Sparrow.—With reference to the papers which have appeared under this heading, I beg to forward a few remarks as to my experience of the habits of this bird in Kent. I have found its nest in the thatch of stacks in fields away from habitations, under the tiles of lone deserted houses, in chalk cliffs by the sea, and in holes in pollard willows, but never in the branches or in bushes. I had a colony under my observation for several years, and I am certain that two broods were reared. The first eggs are laid about the middle of May, and second batch, often in the same nest, exactly a month later.—J. YOUNG, 64, Hereford Road, Bayswater, London, Oct. 3rd, 1890.

YORKSHIRE NOTES ON THE TREE SPARROW.

JAMES BACKHOUSE, F.Z.S., M.B.O.U.,
Hon. Curator in Ornithology to the York Museum.

A PROPOS of the various papers on the Tree Sparrow (*Passer montanus*) in your recent issues, it may be of interest to add a few of my own observations near to York.

Not far away may be seen a very extensive colony of these little-noticed birds, on the farm of my friend Mr. John Harrison, at Wilstrop Hall. The majority of the nests built there are in holes in walls, specially prepared for them (or for more uncommon species) to breed in, and in some seasons scores of pairs bring up their young successfully in such positions. A few build in holes in straw or bean stacks also, but these seem to be decidedly in the minority when wall-nesting holes are available.

The eggs are mostly laid between the middle of May and the end of June, but some lay as late as the beginning of August even, at Wilstrop; and on an early date in May of the present year, though many nests were ready, the writer found only three or four eggs altogether. An average clutch of Tree Sparrow's eggs are darker collectively than those of *P. domesticus*, but in most cases there will be found at least one light-coloured egg in striking contrast to the rest. In size, a pretty large series of eggs from Wilstrop or elsewhere in Yorkshire, appear decidedly less than typical eggs of the commoner bird. The full clutch is usually five or six. The nests of *P. montanus* are, as a rule, less bulky and untidy, and the bird itself is smarter, more slenderly built, and less obtrusive.

Although no instance has come under my notice of the inter-breeding of the two species, it seems likely that it should be so, notwithstanding some slight difference in their usual modes of nesting. Common Sparrows are frequently discovered nesting in adjoining holes to those inhabited by the Tree Sparrow; and Mr. Saunders, in his 'Manual of British Birds,' says—'In captivity this species has bred with the House Sparrow.' The fact that the sexes of *P. montanus* are almost identical in appearance adds considerable interest to the study of the species, and might be an aid in making observations upon the interbreeding of the two birds.

NOTES AND NEWS.

The Rev. H. A. Macpherson inquires whether Sir Richard Owen has published any account of the animal remains of the limestone cave at Arnside, originally discovered by Ruthven. It appears that the late Dr. Gough alludes to the bones having been sent by Mr. E. Whitwell to Prof. Owen. [Can this be the Kirkhead Cave mentioned, with references, in Boyd Dawkins' 'Cave Hunting'?]

FUNGI NEW TO WEST YORKSHIRE.

CHARLES CROSSLAND,
Halifax.

THE following is a list of Fungi gathered this season in the Halifax district, not recorded in F. A. Lees' 'Flora of West Yorkshire,' and therefore new to the West Riding :—

Agaricus (Tricholoma) portentosus Fr. Gathered on the rough ground between the foot of Horshold Scout and the canal near Hebden Bridge, on October 13th, by Mr. Jas. Whitehead, Halifax, while out on a fungus foray with Mr. J. W. Sutcliffe and the writer.

Agaricus (Tricholoma) humilis Fr. Gathered near Stern Mill, Skircoat, Nov. 8th, by Mr. Thos. Aspin, Halifax.

Agaricus (Flammula) hybridus Fr. Found at Ovenden on the 5th November by Mr. G. L. Lister, of Brighouse.

Lactarius squalidus Fr. On the ground in a plantation close to Watkinson Hall, Ovenden near Halifax, on the 20th October; Mr. G. L. Lister.

Lentinus lepideus Fr. var. **contiguus.** Ovenden, Nov. 5th; Mr. Lister.

Phlebia contorta Fr. Shibden, Nov. 3rd; Mr. Lister.

Clavaria grisea Pers. On dead oak leaves, Winterwell, Crimsworth, October 26th; James Needham, Woodend, Hebden Bridge.

The plants were brought to me shortly after being collected, and forwarded to the Royal Herbarium, Kew, where they were examined and certified by Mr. Massee.

NOTE—MAMMALIA.

Squirrel feeding on Fungi.—I am surprised that the fact of the Common Squirrel feeding on fungi should be considered at all a new discovery. Mr. Tom Duckworth, of Carlisle, brought it to my notice as an undoubted fact some seven years ago: and I was then under the impression that the fact had been recorded before. To us, at any rate, it is in no way novel, but a taste that has long been known.—H. A. MACPHERSON, Carlisle, Oct. 8th, 1890.

NOTE—BOTANY.

Lycopodium alpinum in West Cumberland: a Correction.—The Rev. H. E. Fox, of Durham, kindly points out an error in my list of West Cumberland Plants, which appeared in the November 'Naturalist.' *Lycopodium annotinum*, which I have recorded for Lingmell, turns out to be *L. alpinum*, the former species, as Mr. Fox says, only occurring in one locality in the Lake District, viz., the Langdale slopes of Bowfell.—PERCY H. GRIMSHAW, Burley-in-Wharfedale, Nov. 3rd, 1890.

In Memoriam.

JOHN HANCOCK.

All lovers of natural history would learn with regret of the death of this distinguished gentleman, which took place at his residence, St. Mary's Terrace, Newcastle-on-Tyne, on October 11th last.

He had passed man's allotted three-score years and ten. For over 'twice forty years' he had seen 'yon weary winter's sun return,' and at the good old age of 82 he sank peacefully to his rest, being attended to the last by his kind friends Dr. Embleton and Dr. Page. Up to within about a year of his death he scarcely knew what illness was; his vigorous constitution, strictly temperate habits, and love of outdoor exercise, no doubt greatly conducing to his being so strong and active almost to the end.

Born of a family of naturalists—his scarcely less-celebrated brother, Mr. Albany Hancock, being one of them—and associated in his younger days with Atthey, Wingate, Hutton, Hewitson, C. M. Adamson, and others, all ardent lovers of nature, it was scarcely to be wondered that Mr. Hancock should soon drift into what afterwards became the absorbing passion of his life. In those early days Prestwick Carr—a wild, boggy swamp, situated about seven miles North of Newcastle—was the happy hunting-ground for wild fowl and birds of all descriptions, and many were the rare specimens which Mr. Hancock obtained here.

To Mr. Hancock's personal exertions it was mainly owing that the building of the present Museum of Natural History in Newcastle—at a cost of nearly £50,000—was brought to a successful issue. With the munificent assistance rendered by his friends Lord and Lady Armstrong, the late Col. Joicey, the late Edward Joicey, Sir Lowthian Bell, and others, he secured a most eligible site for this purpose, and lived to see a building completed which will for all time be a monument to his untiring energy. In addition to this, he most generously presented the whole of his extensive and valuable collection of birds and skins to the Society—a collection of a life-time, including every British species in almost every change of plumage, with thousands of others besides.

It was a rare treat to sit by him in his work-room while he was stuffing a bird, and hear him talk of bygone days at Prestwick Carr, the Farne Islands—in Scotland—and the Tundras in Russia (whither he went with his friend Mr. Hewitson on an ornithological excursion); or to listen to him while he lucidly explained the varying changes in

the plumage of his favourite Falcons during the moult. At a glance at the markings he could almost tell the whole life-history of the bird.

In easy circumstances, and having no business cares to harass or worry him, he was enabled to devote his whole time to his favourite pursuit, and this time during his later years he gave most ungrudgingly to the Natural History Society's Museum, where his works of art remain as a testimony of his skill.

In addition to taxidermy, Mr. Hancock was also an accomplished sculptor, and an artist of no mean order, one of his latest gifts to the museum being a series of water-colour drawings illustrating bird-life, mostly taken from living subjects in his younger days, to assist him in accurately setting them up afterwards.

As a landscape gardener he was a great proficient. Cragside (Lord Armstrong's seat), Jesmond Dene, Newton Hall, and other beautiful estates and grounds, were laid out by him. His keen eye took in every turn of the landscape; not a jutting out piece of rock-work, or a fallen tree trunk, but were all taken advantage of, and made to serve a purpose of his own.

His friend Mr. W. C. Hewitson, on his decease, left him the beautiful house and grounds at Oatlands Park, near Weybridge, Surrey, and from here the writer had from him probably one of the last letters he ever wrote there. In it he concludes:—

'Birds generally are very scarce here this year (1889); I mean such species as we should expect to meet with in the South. . . . My state of health is just about the same as it was in Newcastle. Of course, I get out here every day, and breathe the fresh air, and I hope it will tell in the long run.'

But it was not to be! On his return to Newcastle his friends were grieved to see how his illness had told upon him, and how feeble he had become. Towards the end of last year he took to his house, and scarcely ever left it again afterwards.

Of a shy and retiring disposition—unassuming, gentle, and most courteous in his manner—where many with not half of his pretensions would have pushed themselves forward and had honours showered on them, Mr. Hancock preferred to remain quietly in the background. Enough for him that his efforts were appreciated by his friends—he asked nothing more—and it was always one of his chief pleasures to impart the knowledge he had acquired to anyone who took a real interest in his favourite study. A true gentleman in every sense of the word, he leaves a blank behind him which it is impossible to re-fill. Mr. Hancock was unmarried, and leaves behind him—besides other relations—a sister, the faithful companion of a life-time.—H. T. A.

Naturalist,

BIBLIOGRAPHY:

Papers and Records published with respect to the Natural History and Physical Features of the North of England.

PHANEROGAMIC BOTANY, 1886.

The Editors have been much indebted to Mr. P. Fox Lee, of Dewsbury, for assistance in the Botanical Bibliography, a considerable number of the titles now given being from his pen, and regret very much that pressure of other work prevents Mr. Lee from continuing it. The Editors are hopeful that some other botanist will volunteer to take up the task that Mr. Lee has been obliged to relinquish.

The present instalment includes not only titles for 1886, but also all that have been published in 'The Naturalist' during 1884 and 1885, and a few others for those years that have hitherto escaped attention.

Anon. [not signed]. **Durham, York N.W., Linc. N. and S., York Mid W., Westmld., Derbysh., York S.W., Lanc. W. and S.**

[Review of] The Student's Flora of the British Islands [with North-English references in the case of *Polygala austriaca* (Teesdale), *Scirpus rufus* (Linc. coast), *Tilia platyphyllos* (N.W. Yorkshire), *Thlaspi occitanum* (Settle, etc., Westmorland, Durham), *Senecio campestris* (Ancaster, Linc. S.), *Carex ornithopoda* (Mackershaw Wood, Ripon, and Derby), *Selinum carvifolium* (Lincolnshire), *Potentilla norvegica* (Kirkstall to Snaith), *Crepis nicæensis* (Harrogate), *Malva borealis* (Goole and Preston)]. Nat., Oct. 1884, 67-70.

Anon. [not signed]. **York S.W.**

[Obituary of Amos Carr : his connection with *Circæa alpina* (Riveton Valley), *Hypericum dubium*, *Scutellaria minor*, *Arbutus uva-ursi*, and *Cotyledon umbilicus* (all near Sheffield), and *Carduus acaulis* (Kiveton Common)]. Nat., Oct. 1884, p. 71.

Anon. [Editor of Naturalist]. **York Mid W.**

[Children's Flower Service at Staveley near Boroughbridge ; prizes given for named collections of wild flowers, the winner naming twenty-seven out of a total of thirty-four different kinds sent in]. Nat., Sep. 1885, p. 329.

Anon. [not signed]. **York S.W.**

Yorkshire Dialects [as used in valley of Calder from Wakefield up to source : Ackerons, ackerils=acorns (*Quercus robur*) ; Alehoof=ground ivy (*Nepeta glechoma*) ; Arse-smart=water pepper-plant (*Polygonum hydropiper*) ; Aspin=trembling poplar (*Populus tremula*) ; Birk=birch (*Betula alba*) ; Blags=blackberries (*Rubus fruticosus*) ; Bumblekites in North Riding=same ; Brackens=*Pteris aquilina* ; Butter and Cheese=tender leaves of thorn (*Cratægus oxyacantha*)]. Yorksh. Folk-lore Journ., Part 1, Oct. 1885, 12-16.

Anon. [not signed]. **York S.E.**

Notes made by Hull Field Naturalists in 1885 ; *Villarsia nymphæoides*, *Helleborus fœtidus*, *Catabrosa aquatica*, *Hyoscyamus niger*, *Linaria elatine*, and *Asplenium ruta-muraria* added to local list]. Nat., Feb. 1886, p. 63.

ANON. [not signed]. **York S.W. and Mid W.**

In Memoriam—W. W. Newbould [with incidental reference to his paper on *Hutchinsia alpina* on Ingleborough, and his addition of *Epipactis media* (*violacea*) to the West Riding Flora]. Nat., May 1886, pp. 159-160.

ANON. [not signed]. **Lincs. N.**

Louth Naturalists' Society [Botanical report; *Viola hirta*, *Triglochin maritimum*, and *Eriophorum polystachion* noted]. Nat. World, Aug. 1886, iii. 158.

ANON. [not signed]. **York N.E. and Mid W.**

York. Mount School Natural History Society [*Gentiana pneumonanthe* at Strensall, also *Menyanthes*, *Drosera*, &c., and *Colchicum autumnale* at Bishopthorpe]. Nat. Hist. Journ., Oct. 15th, 1886, x. 151.

ANON. [Eds. of N.H.J.]. **Cumbld., York N.W., N.E., Mid W. and S.W.**

The Floral Calendar [table of phenological observations made at Silloth, Cotherstone (Teesdale), Ayton, Thirsk, York, Birstwith (Nidderdale), Settle, and Ackworth, besides other stations in Ireland and Southern England upon 31 species of plants, with special notes upon some of them]. Nat. Hist. Journ., Oct. 15th, 1886, x. 153-154.

ANON. [possibly J. H. Salter]. **York N.W., N.E., and Mid W.**

Rarities.— . . . Cotherstone [*Chrysosplenium alternifolium* and *Lathræa*]. Thirsk [*Rosa spinosissima*, *Anthemis tinctoria*, *Serratula tinctoria*, *Pyrola minor*, *Chlora perfoliata*, *Gentiana pneumonanthe*, *G. verna*, *Cuscuta epithymum*, *Trientalis europæa*, *Ophrys apifera*, *Tulipa sylvestris*, *Convallaria majalis*, and *Ornithogalum nutans*]. Wensleydale, Yorks. [*Saxifraga aizoides*]. Ingleborough [*Cryptogramme crispa*, *Polypodium calcareum*]. Nat. Hist. Journ., Dec. 15th, 1886, 193-195.

C. C. BABINGTON. **York Mid W. and N.W., Northmbld., Lancs., Durh.**

Notes on British Rubi: with special reference to the List in 'London Catalogue,' ed. 8 [*Rubus hamulosus* L. & M., Gormire, Bardon Mills, S. Tynedale, Kirkby, Lancs., and Hebden Bridge, Yorks.; refer for details and remarks on the species (p. 218); *R. borœanus* Génév., Thirsk (Baker) (p. 221); *R. maassii* Focke, Woodend, Yorkshire, and Morden, Durham (p. 225); *R. mucronatus* (Blox.), Thirsk (p. 226); *R. thyrsiflorus* W. & N., Ingleby, Yorkshire (p. 227); *R. radula γ. denticulatus* Bab., Loxley near Sheffield (p. 230); *R. koehleri*, Clives, Yorks. (p. 231); *R. diversifolius* Lindl., Thirsk and Sessay (p. 231); *R. mutabilis* Génév., Cleves, Yorks. (p. 232); *R. saxicolus* Müll., Byland, Yorks. (p. 233); *R. reuteri*, between Thirsk and Topcliffe, Kirkby, Lancs. (p. 235); *R. deltoideus* Müll., Thirsk and Oulton (p. 235); *R. scabrosus* Müll., Thirsk (p. 236); *R. cæsius γ ulmifolius*, Naimby, Yorks. (p. 236); *R. montanus*, Boerby, Yorks. (p. 236); and *R. hamosus*, Doreton, Yorks. (p. 237)]. Journ. of Bot., July and Aug. 1886, xxiv. pp. 216-223, 225-237.

JAMES BACKHOUSE. **Durham, York N.W.**

Teesdale Botany: Historical and Personal Recollections [many rarities enumerated in *Hieracia*, with *Woodsia ilvensis*, *Saxifraga hirculus*, *Senecio spathulæfolius*, *Viola arenaria*, *Polygala uliginosa*, *Cystopteris alpina*, etc., as well as some of the early discoveries of rare plants by John Binks]. Nat., Aug. 1884, pp. 10-13.

CHARLES BAILEY. **Cheshire.**

[Cotula coronopifolia L. from Leasowe near Birkenhead, collected in Aug. 1885 by Henry Searle and Abel Bottomley of Ashton; appears to have been established for some years; probably a castaway from Leasowe Castle grounds, or introduced with foreign ballast]. Proc. Manch. Lit. and Phil. Soc., Feb. 15th, 1886, xxv. 219.

CHARLES BAILEY. **Westmorland, Yorkshire.**

Ranunculus Flammula, Linn., and R. reptans, Linn.; and their connecting links [discussing specimens of *R. reptans* found in July 1886 on the western shore of Lake Ullswater, and comparing the two forms at some length]. Proc. Manch. Lit. and Phil. Soc., Nov. 30th, 1886, xxvi. 47-51, and also at p. 52.

Cumberland, Westmorland, Furness, Northumberland,
J. GILBERT BAKER. Durham, York N.W. and N.E.

Flora of the English Lake District [summarised and a comparative table given for Britain, North Yorkshire, Northumberland and Durham, and Lake District]. Nat., Nov. 1884, p. 86.

J. G. BAKER. Cumbld., Westmld., Furness, York N.W., Cheshire.

On the Relation of the British Forms of Rubi to the Continental Types [Yorkshire and Lake District experience quoted, and a single Cheshire specimen cited]. Journ. of Bot., Jan., Feb. and March 1886, xxiv. 4-7, 43-47, 71-77.

J. GILBERT BAKER. Cumberland.

Botany of the Cumberland Border Marches [an enumeration—with localities—of 361 species of flowering plants collected about Gilsland, with a topographical introduction]. Nat., Nov. 1886, pp. 325-332.

F. BATLEY. York S.W.

Flora of Barnsley and neighbourhood [from *Ranunculaceæ* to *Geraniaceæ*: first instalment]. Trans. Barnsley Nat. Soc., 1885-6, v. pp. 11-14.

W. H. BEEBY. York N.W., Westmorland, Cumberland.

On Sparganium neglectum [which has not occurred north of the Midland Counties in England; writer has seen specimens of *S. ramosum*, which is the northern form in Britain, as follows: Yorks N. W., F. A. Lees; Westmorland, Miss E. Hodgson (Hb. Mus. Brit.); Cumberland, W. Hodgson]. Journ. of Bot., May 1886, xxiv. 142-143.

ALFRED W. BENNETT. Westmorland, Furness.

Additional localities for [31] Lake-Land Plants [made during a six weeks' stay between Ambleside and Langdale; supplementary to Baker's 'Flora of the English Lake District'; 24 are noted for Westmorland, 11 for Furness]. Journ. of Bot., Nov. 1885, xxiii. 330-331.

Cheviotland, Northumberland, York Mid W.,
ARTHUR BENNETT. Durham, Cheshire, Lancashire S.

The Botanical Exchange Club of the British Isles. Report for 1884, pp. 101-120 [numerous records of critical plants for the counties enumerated].

ARTHUR BENNETT. Derbysh., Chesh., Yorks., 'Teesdale,' 'Liverpool.'

Notes on the British Species of Epilobium [from Prof. C. Haussknecht's exhaustive monograph (1884); the following are cited:—*E. parviflorum* L., under which Haussknech thas *E. parviflorum* × *roseum* = *E. persicinum* Rchb., Derbyshire (Herb. Hooker); *E. montanum* L. form i. *verticillatum*, Derbyshire (Babington); *E. obscurum* Schreb., under which are *E. obscurum* × *palustre* = *E. schmidtianum* Rostkov, Liverpool (Harbord Lewis, as *obscurum*), Teesdale (Babington, as *virgatum*), Thirsk (Baker, as *E. ligulatum* Baker), and Hale Moss, Cheshire, and *E. obscurum* × *parviflorum* = *E. dacicum*, Borbas, Cheshire (Bailey); *E. palustre* L., under which is *E. palustre* × *parviflorum* = *E. rivulare* Wahl., Teesdale (Babington); and *E. alsinifolium*, under which is *E. alsinifolium* × *palustre* = *E. haynaldianum* Haussk., Weltrope, in Durham (leg. Baker)]. Trans. Bot. Soc. Edinb., vol. xvii. (Part i.), 47-50.

Chesh., Linc. N., Linc. S., Derbysh., Lanc. S., Lanc. W.,
ARTHUR BENNETT. York N.E., York S.W., York N.W., Westmld.

The Distribution of Potamogeton in Britain [a list of counties and vice-counties additional to 'Top. Bot.', ed. 2; for Chester is reported *P. densus*; for Linc. N., *P. flabellatus*; for Linc. S., *P. pusillus*, *P. decipiens*, *P. zizii*, and *P. rufescens*; for Derbyshire, *P. pusillus*, *P. natans* (seg.), and *P. polygonifolius*; for Lanc. S., *P. mucronatus*; for Lanc. W., *P. polygonifolius*; for York N.E., *P. mucronatus*; for York S.W., the same; for York N.W., *P. natans* (seg.); and for Westmorland, *P. obtusifolius*]. Journ. of Bot., May 1886, xxiv. 139-141.

W. D. Braithwaite, Secretary. **York S.W.**

Ackworth School Natural History Society [with notes on three plants new to district, viz., *Helleborus fatidus* (Brockendale), *Doronicum pardalianches* (N. Elmsall), and *Atropa belladonna* (Nostell Park)]. Nat. Hist. Journ., June 15th, 1886, x. 100.

W. D. Braithwaite, Secretary. **York S.W.**

Ackworth Natural History Society [the Botanical Record Committee have struck *Clematis vitalba*, *Thalictrum flavum*, and *Ranunculus lingua* out of the Ackworth Flora; and have no record of *Anemone pulsatilla* being found since 1881]. Nat. Hist. Journ., Dec. 15th, 1886, x. 188.

Robert Brown. **Lanc. S., York N.E. & Mid W., Westmld. & Furness.**

Botanical Résumé [an account of the plants met with by Liverpool N.F.C. in 1885 during excursions to Winwick and Newton (June 6th), to Knowsley Park (July 11th), and Rufford (Aug. 15th)—all in South Lancashire; note on *Nephrodium spinulosum* in Yorkshire; *Elatine hexandra* from Knowsley, recorded as additional to the Lancashire Flora]. Proc. Liverpool Nat. Field Club for 1885-86 (pub. 1886), pp. 36-39.

Robert Brown. **Lanc. S.**

Names of Some of the Most Interesting Plants noticed during the [Liverpool Field Club] Excursions in 1885 [list of 11 plants noted 6th June at Winwick, 8 noted 11th July at Knowsley, 20 noted 15th Aug. at Rufford—all in Lancashire]. Proc. Liverpool Nat. F. Club for 1885-86 (pub. 1886), pp. 40-42.

William Carruthers. **York S.E.**

The Age of some Existing Species of Plants; being the address to the Biological Section of the British Association at Birmingham, 1886 . . . with additions by the author [in the lacustrine beds of Holderness is found a small birch (*Betula nana* L.) now limited in Great Britain to some Scottish mountains, and with it *Prunus padus* L., *Quercus robur* L., *Corylus avellana* L., *Alnus glutinosa* L., and *Pinus sylvestris* L.]. Journ. of Bot., Oct. 1886, xxiv. 309-318.

J. W. Carter. **York Mid W. or S.W.**

[Alnus glutinosa and Acer campestre in Bradford district]. Ent. Mo. Mag., Nov. 1886, xix. 141.

Thomas Carter. **York Mid W.**

Marfield Pond, Masham, and its Bird- [and Plant-] Life [incidental reference to Persicaria (*Polygonum amphibium* L. ?), Ranunculus (*R. Flammula* ?), Water Plantain (*Alisma Plantago*), Great Sundew (*Drosera anglica* Huds.), Great Meadow Rue (*Thalictrum flavum*), Marsh Cinquefoil (*Potentilla Comarum*), Bog Asphodel (*Narthecium ossifragum*), Bog Pimpernel (*Anagallis tenella*), Marsh Pennywort (*Hydrocotyle vulgaris*), Grass of Parnassus (*Parnassia palustris*), Marsh Helleborine (*Epipactis palustris*), White Helleborine (*Cephalanthera pallens*), Globe Flower (*Trollius europæus*), Bird's-eye Primrose (*Primula farinosa*), Butterwort (*Pinquicula vulgaris*); most disappearing from the pond being now drained]. Nat., Aug. 1886, p. 231.

[Joseph] Chappell. **? Lanc. S.**

[Galeobdolon luteum at Castle Mill near Manchester]. Ent. Mo. Mag., Aug. 1885, xxii. 69.

J. E. Clark. **York Mid W.**

Trientalis europæa in Nidderdale [at Brimham and at Pateley]. Nat., Feb. 1886, p. 60.

T. D. A. Cockerell. **Lanc. S., Cheshire.**

A September Walk through Lancashire, Cheshire, and Staffordshire [Sep. 9th to 11th, 1885; *Equisetum arvense* abundant about Rainhill and Warrington, *Nuphar* between those places, and also between Warrington and Knutsford with *Lemna minor*, *Alisma plantago*, *Digitalis*, *Gnaphalium*

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uliginosum, and *Campanula rotundifolia*; *Lemna minor*, *Veronica beccabunga* and *Nuphar* between Knutsford and Chelford, violet-flowered *Viola tricolor* and *Tussilago farfara* between Chelford and Congleton, *Elodea canadensis*, *Nasturtium officinale* noted south of Congleton]. Nat., Feb. 1886, pp. 55-57.

M. C. COOKE. **Cumberland, Lanc. S., York N.E., Cheviotland.**

British Sphæropsideæ. Provisional list of Species hitherto found in the British Islands [on *Ægopodium*, Whitehaven; *Eryngium*, near Liverpool; *Prunus domestica* and *P. spinosa*, Thirsk; *Pteris*, *Spiræa ulmaria*, Berwick]. Grevillea, March 1886, xiv. 101-108.

JOHN CORDEAUX. **York S.E., Linc. N.**

The Spurn [as a locality for plants; *Hippophaë rhamnoides*, *Eryngium maritimum*, *Convolvulus soldanella*, *Glaux maritima*, *Arenaria peploides*, and *Honckenya peploides* noted as occurring]. Nat., Aug. 1884, p. 7.

JOHN CORDEAUX. **Linc. N. and S.**

Lincolnshire [with notes on its palæo-botany (remains of oak, beech, elm, birch, holly, yew, hazel, alder, willow, Scotch fir, and sallow), and on disappearance of the great fen ragwort (*Senecio paludosus* L.), giant cineraria (*Senecio palustris* DC.), marsh sowthistle (*Sonchus palustris* L.), fragrant bog-myrtle (*Myrica Gale* L.), water germander (*Teucrium Scordium* L.), marsh fern (*Nephrodium Thelypteris* Desv.), Royal fern (*Osmunda regalis*)]. Nat., Jan. 1886, p. 10.

WILLIAM CRAIG. **Durham, Westmorland, York N.W.**

Report on the Excursion of the Scottish Alpine Botanical Club to Teesdale and Kirby Lonsdale in 1884 [in which is given daily lists of the rarer phanerogams observed]. Trans. and Proc. Bot. Soc. Edinburgh, vol. xvi. Part 2, pp. 203-209.

THOS. DENNIS. **York S.E., Linc. N.**

Ædidium pimpinellæ var. apii [on *Apium graveolens* near Cleethorpes and near Hedon; notes also concerning *Statice limonium* and *Spergularia marina*]. Nat., Aug. 1884, p. 21.

G. CLARIDGE DRUCE. **Westmorland.**

A New Variety of Cow-wheat: *Melampyrum pratense* var. *hians* [in woods near Ambleside and about Derwentwater]. Nat., Sep. 1884, pp. 35-36.

W. DUCKWORTH. **Cumberland, Westmorland.**

Wild Flowers around Carlisle. Part II. [The various local species of the natural orders Ericaceæ, Apocynaceæ, Gentianaceæ, Polemoniaceæ, Convolvulaceæ, Solanaceæ, Scrophulariaceæ, Orobanchaceæ, Labiatæ, Boraginaceæ, Lentibulariaceæ, Primulaceæ, Plumbaginaceæ, Chenopodiaceæ, Polygonaceæ, Euphorbiaceæ, Urticaceæ, Orchideæ, Iridaceæ, Amaryllidaceæ, Liliaceæ, Trilliaceæ, Hydrocharidaceæ, Alismaceæ, Araceæ, and Juncaceæ, are successively treated in a popular style]. Trans. Cumb. and Westm. Assoc., 1884-85 [pub. 1885], x. 43-57.

JOHN N. DUFTY. **Notts.**

Great Toothwort (*Lathræa squamaria*) [at Laxton near Tuxford, May 8th, 1886]. Nat. World, June 1886, iii. 118.

EDS. [of Nat. Hist. Journ.]. **? York N.E.**

Curious Periwinkle [*Vinca minor*, from Charles De Vit of Ayton School; one white and four blue petals, growing amongst white flowers; no blue near]. Nat. Hist. Journ., May 15th, 1886, x. 84.

EDS. [of Nat. Hist. Journ.]. **York N.E.**

Three 'Daisies,' received by us from Ayton from Charles de Vit, on June 14th [with 'leaves like chamomiles' and flowers like Ox-eye Daisies]. Nat. Hist. Journ., Nov. 15th, 1886, x. 175.

EDS. [of Nat. Hist. Journ]. **York N.E.**

A Seven-headed Daisy [(*Bellis perennis*) found June 15th, at Levisham or Goathland]. Nat. Hist. Journ., Nov. 15th, 1886, x. 175.

EDS., N.H.J. **York S.W.**

Ackworth Reports [*Hypericum montanum*, Walton Wood; *Habenaria albida* at Brockendale noted; also that *Anemone pulsatilla* 'is, we fear, almost exterminated from its old habitat at the Danish Camp']. Nat. Hist. Journ., Nov. 15th, 1886, x. 167.

A. H. EVANS. **Northumberland or Cheviotland.**

Localities of Plants [54 species from various localities in Northumberland, Berwickshire, Haddingtonshire, etc., but the *counties* are not clearly indicated]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 205-206.

WM. FOWLER. **York S.W.**

The Yorkshire Naturalists' Union at Askern [20th May, 1886: *Geum intermedium* and *Veronica montana* noted]. Nat., June 1886, p. 190.

WILLIAM FOWLER. **York Mid W.**

The Yorkshire Naturalists' Union in Upper Nidderdale [in July 1886: *Stellaria nemorum*, *Carduus heterophyllus*, *Habenaria chlorantha*, and *Stachys ambigua* noted]. Nat., Aug. 1886, p. 254.

W. W. FOWLER. **Lanc. S., Linc. N,**

[Galeopsis tetrahit v. versicolor at Chat Moss; and *Ajuga reptans* at Langworth Wood near Lincoln noted]. Ent. Mo. Mag., April 1885, xxi. 264.

W. W. FOWLER. **Cheshire.**

[Galeobdolon luteum near Bowdon]. Ent. Mo. Mag., July 1885, xxii. 33.

W. W. FOWLER. **Linc. N.**

[Potentilla tormentilla in Langworth Wood near Lincoln]. Ent. Mo. Mag., Aug. 1885, xxii. 69.

W. W. FOWLER. **York N.E.**

[Helianthemum vulgare at Scarborough]. Ent. Mo. Mag., Aug. 1885, xxii. 71.

W. W. FOWLER. **Linc. N.**

[Heracleum sphondylium in Langworth Wood near Lincoln]. Ent. Mo. Mag., Aug. 1885, xxii. 61-62.

H. E. FOX. **Cheviotland.**

Additions to the Flora of Northumberland [plants not recorded in Mr. Baker's Flora; *Arenaria serpyllifolia* a form stouter and more glandular than the type, *Centunculus minimus*, *Radiola millegrana*, *Viola curtisii*, *Fumaria confusa* and an abundance of that curious orchid, *Corallorhiza innata* in a boggy wood; also *Melilotus arvensis*, *Rumex maritimus*, and *Althæa officinalis* probably introduced]. Nat., Jan. 1885, p. 139.

W. GAIN. **Notts.**

Rosa tomentosa in Notts [near Sutton-on-Trent; critical notes by F. A. Lees appended]. Nat., Aug. 1884, p. 21.

H. GOSS. **Westmorland.**

Rosa lucida (Ehrh.) in Westmoreland [on Meathop Moss; determined by J. G. Baker]. Nat., April 1886, p. 100.

GEO. ARTHUR GRIERSON. **York S.W.**

Hesperis matronalis [found growing freely and vigorously, in a copse between Rotherham and Wickersley; opinion expressed as to nativity here]. Sci. Goss., July 1886, p. 165.

H. GROVES. **Lanc. S.**

[Exhibition (on Nov. 1, 1883) of Chara braunii from Ashton-under-Lyne, new to Brit. Flora]. Proc. Linn. Soc., Session 1883-84 [pub. Oct. 1886], p. 2.

HENRY and JAMES GROVES. **Linc. N., Derbyshire, Lanc. S., York N.W., Isle of Man.**

Notes on the British Characeæ for 1884 [recording *Ch. fragilis* Desv. for Derby, 1883, C. Bailey, and Lanc. S., 1882, H. Searle (Hb. Arth. Bennett); *Ch. aspera* Willd. for York N.W., Wensley Dale, 1884, J. Percival, and

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Isle of Man, 1881, R. Wood (Hb. Bennett); *Ch. contraria* Kuetz, for Cheshire, New Brighton, 1884, H. Searle, and Westmorland, 1863, W. M. Hind (in Hb. T. C. Dublin); Do. var. *hispidula* Braun, from Cheshire, New Brighton, 1884, H. Searle; *Ch. hispida* L., from Lanc. S., 1884, H. Searle; *Ch. vulgaris* L. from Linc. N., 1884, H. Searle (Hb. Bennett); ditto, var. *longibracteata* from Lanc. S., 1882, H. Searle, and York Mid W., 1884, T. Hebden; ditto, var. *papillata* from Lanc. S., 1883, H. Searle; ditto, var. *crassicaulis*, Derby, Monsal Dale, 1884, W. Pullinger; *Tolypella glomerata* Leonh., from Cheshire, New Brighton, 1884, H. Searle, a form with extremely long sterile branchlets; and *Nitella opaca* Agardh, from Westmorland (Lake Lancs.), 1884, T. Hebden]. J. of Bot., March 1885, xxiii. 81-83.

HENRY and JAMES GROVES. **Cheshire, Linc. N., Notts.**

Notes on the British Characeæ for 1885 [*Chara aspera* Willd., Cheshire, Moreton, 1885, H. Searle; *Ch. vulgaris* var. *longibracteata*, Lincs. N., 1884, H. Searle; var. *papillata*, Cheshire, 1885, H. Searle; and *Nitella flexilis* Ag., Notts., near Worksop, 1885, H. Searle; are quoted for the north-country]. Journ. of Bot., Jan. 1886, xxiv. 1-4.

ALLAN B. HALL. **York N.E. or N.W.**

Yellow Star of Bethlehem (*Gagea lutea*) near Thirsk, April 27th. Nat. Hist. Journ., May 15th, 1886, x. 84.

JAMES HARDY. **Northumberland S.**

Report of Meetings of Berwickshire Naturalists' Club, for the year 1885 . . . Rothbury [24th June; an account of the British plants cultivated by Sir William Armstrong at Cragside, and *Digitalis purpurea*, *Corydalis claviculata* and *Genista anglica* are cited as native plants still surviving; as are also *Geranium sylvaticum*, *Polypodium dryopteris*, and *P. phegopteris*; *Scrophularia nodosa*, *Trientalis*, *Anemone nemorosa*, *Carex binervis*, *Senecio sylvaticus*, *Chelidonium majus*, *Asplenium ruta-muraria*, *Agraphis nutans*, *Genista anglica*, *Polygala vulgaris*, *Lastræa dilatata*, *Nuphar intermedium*, *Andromeda polifolia*, *Eriophorum vaginatum*, *Empetrum nigrum*, *Primula vulgaris*, *Veronica beccabunga*, and *Tanacetum vulgare* also noted]. Proc. Berw. Nat. Club for 1885, xi. 31-50.

JAMES HARDY. **Northumberland S., Durham.**

Report of Meetings of Berwickshire Naturalists' Club for the year 1885. . . . Haughton Castle, Simonburn Church, and Chipchase Castle, North Tyne [30th July; Corn Poppy, *Carduus arvensis*, *Knautia arvensis*, *Galium mollugo*, *Stachys betonica*, and *Phleum pratense*, noted; and, at Dunston, *Galium mollugo*, *G. verum*, *Solanum dulcamara*, *Fagus sylvatica*, *Ulmus montana*, *Acer pseudoplatanus*, *Taxus baccata*, *Prunus avium*, *Abies excelsa*, *Arundo phragmitis*, and *Urtica urens*; also from South Shields, *Rosa spinosissima*]. Proc. Berw. Nat. Club for 1885 (pub. 1886), xi. 50-64.

ARTHUR W. HARRISON. **Yorkshire.**

Chapters on British Ferns. . . No. II. [*Trichomanes radicans* in Yorkshire casually alluded to]. Nat. World, July 1886, iii. 128.

ARTHUR W. HARRISON. **Yorkshire, Lancashire, Westmorland.**

Chapters on British Ferns. . . No. IV. [*Nephrodium filix-mas* to 2,400 feet in Yorkshire; *N. rigidum* occurs in Lancashire, Yorkshire, and Westmorland]. Nat. World, Sep. 1886, iii. 172.

THOMAS HICK. **York Mid W.**

The Yorkshire Naturalists' Union at Boroughbridge [25th May, 1885: *Stellaria nemorum*, *Prunus insititia*, *P. cerasus*, *Campanula glomerata*, *Hydrocharis morsus-ranæ*, *Orchis morio*, *Asplenium adiantum-nigrum*, *Botrychium*, *Primula farinosa*, and *Polygonatum multiflorum* noted]. Nat., July 1885, p. 280.

C. P. HOBKIRK. **York S.W.**

Lathræa squamaria near Dewsbury [growing on sycamore, between Dewsbury and Mirfield]. Nat., Sep. 1885, p. 320.

J. B. Hodgkinson. **Westmorland.**

Solomon's Seal [*Polygonatum multiflorum*] **in Westmoreland** [locality stated]. Nat., June 1885, p. 259.

J. B. Hodgkinson. **Westmorland or Furness.**

[**Impatiens noli-me-tangere on the borders of** Windermere Lake in Lancashire, but local]. Ent. Mo. Mag., Sep. 1885, xxii. 91.

J. B. Hodgkinson. **Lanc. W.**

Trifurcula pallidella and Genista tinctoria [at Dutton near Ribchester]. Ent. Mo. Mag., June 1886, xxiii. 15.

W. Hodgson. **Cumberland.**

Vicia sylvatica [of a stunted type growing on the Cumberland coast-line, as contrasted with fine examples met with inland near Carlisle]. Nat., July 1885, p. 278.

William Hodgson. **Cumberland, Westmorland, Furness.**

The Hill Naturalist [a popular review of the plants found at 900 ft. and upwards on the Lake hills]. Trans. Cumb. and Westm. Assoc., No. xi., 1885-6 (pub. 1886), pp. 13-19 and 27.

W. Hodgson. **Cumberland.**

The Botany of the Solway Shore [an enumeration of the plants in popular style and systematic order from Ranunculaceæ to Saxifragaceæ inclusive]. Trans. Cumb. and Westm. Assoc., No. xi, 1885-6 (pub. 1886), pp. 114-126.

W. Hodgson. **Cumberland.**

Botanical Notes from the Solway [a number of exotics growing upon waste heaps in 1885 and the spring of 1886, including *Fumaria confusa*, *Sisymbrium pannonicum*, *Camelina sativa*, *Echinospermum lappula*, *Anagallis cærulea*, *Lolium perenne* v. *ramosum* (a splendid example), *Avena fatua*, etc.]. Nat., Aug. 1886, p. 230.

Peter Inchbald. **Yorkshire.**

[**Ranunculus lingua . . . is not uncommon** in the fenny parts of Yorkshire]. Ent., Jan. 1886, p. 10.

H. Wallis Kew. **Linc. N.**

Elder [*Sambucus nigra*] **growing upon a Willow** [(*Salix* species not stated) near the canal at Louth]. Nat., Sep. 1885, p. 320.

H. Wallis Kew. **Linc. N.**

A Post-glacial Ravine [at Welton Vale near Louth ; with notes on its plants, including *Viola odorata* (white var.), *Vinca major*, *Pyrus aria*, *Taxus baccata*, *Typha latifolia*, and *Sisymbrium alliaria*]. Nat. World, Feb. 1886, iii. 21-22.

H. Wallis Kew. **Linc. N.**

Another Postglacial Ravine [Hubbard's Valley near Louth] and its inhabitants [with mention of *Fagus sylvatica*, *Galium aparine*, *Medicago maculata*, *M. lupulina*, *Ononis arvensis*, *Trifolium pratense*, and *Trifolium agrarium*, with figure of leaves of *Med. maculata*]. Nat. World, March 1886, iii. 42.

H. Wallis Kew. **Linc. N.**

In the Woods in April [3rd, 1885 ; near Louth ; various plants, including *Senecio jacobæa*, referred to by English names]. Sci. Goss., April 1886, pp. 78-79.

H. Wallis Kew. **Linc. N.**

Old Chalk-pits [near Louth ; mention made of *Anthyllis vulneraria*, *Chlora perfoliata*, *Thymus serpyllum*, *Euphrasia officinalis*, *Gentiana campestris*, *Orchis pyramidalis*, *Daucus carota*, *Origanum vulgare*, *Carlina vulgaris*, *Onobrychis sativa*, *Tussilago farfara*, etc.]. Nat. World, May 1886, iii. 81-82.

H. Wallis Kew. **Linc. N.**

The Greasy-field and Grisel-bottom [near Louth; *Salix, Rosa canina, Crataegus oxyacantha, Rubus fruticosus, Corylus avellana, Viburnum opulus, Solanum dulcamara, Centaurea scabiosa, Quercus robur, Genista tinctoria, Pedicularis sylvatica, Achillæa ptarmica, Serratula tinctoria, Potentilla tormentilla, Polygala vulgaris, Scabiosa succisa, Lysimachia nummularia, Ranunculus flammula, Agrimonia eupatoria, Senecio jacobæa*]. Nat. World, June 1886, iii. 101-103.

H. Wallis Kew. **Linc. N.**

A Half-Day's Ramble on the Lincolnshire Coast [at Mablethorpe; *Ammophila arundinacea, Hippophaë rhamnoides, Senecio jacobæa, Galium verum, Cardamine hirsuta, Erophila vulgaris*, and *Stellaria media* noted]. Nat., June 1886, p. 172.

H. Wallis Kew. **Linc. N.**

In the Woods [near Louth] in Summer [*Trifolium repens, Habenaria bifolia, Paris quadrifolia, Chelidonium majus, Viola canina, Veronica officinalis, Lysimachia nummularia, Borago officinalis, Epilobium angustifolium, Campanula latifolia*, and *Scutellaria galericulata* noted]. Nat. World, July 1886, pp. 121-124.

H. Wallis Kew. **Linc. N.**

Pteromalus puparum [and Ballota nigra] near Louth [at Cawthorpe]. Nat., July 1886, p. 213.

H. Wallis Kew. **Linc. N.**

Woodland Rambles in Lincolnshire [*Viola hirta* and *Potentilla fragariastrum* in Grisel-bottom, and the former in Haugham Pasture near Louth]. Young Nat., July 1886, vii. 130-131.

H. Wallis Kew. **Linc. N.**

On the Lincolnshire Wolds [at Donington-on-Bain; *Tussilago farfara, Cardamine hirsuta, Erophila vulgaris, Viola odorata, Ranunculus sceleratus*, and *Dipsacus* noted]. Nat. World, Aug. 1886, iii. 141-143.

H. Wallis Kew. **Linc. N.**

Evenings in Spring [near Louth; *Pedicularis sylvatica, Orchis mascula, Scilla nutans, Alchemilla vulgaris, Barbarea vulgaris, Sisymbrium alliaria, S. officinale, Petasites vulgaris*, and *Capsella bursa-pastoris* noted]. Nat. World, Sep. 1886, iii. 162.

H. Wallis Kew. **Linc. N.**

Botanical Notes from the Lincolnshire Coast [about Mablethorpe, Saltfleet; numerous species mentioned]. Sci. Goss., Sep. 1886, pp. 207-209.

H. Wallis Kew. **Linc. N.**

[Scabiosa succisa and Centaurea nigra mentioned as in Maltby Wood near Louth]. Ent. Mo. Mag., Oct. 1886, xxiii. 107.

H. Wallis Kew. **Linc. N.**

Lincolnshire Marsh Drains [and their plants; *Eriophorum polystachion, Apium graveolens, Ranunculus aquatilis, R. sceleratus, Veronica anagallis, Iris pseudacorus, Potamogetons, Butomus umbellatus, Juncus articulatus, Carex vulpina, Heleocharis palustris, Scirpus maritimus, Triglochin maritimum, Typha latifolia, Spergularia media, Armeria vulgaris, Statice limonium, Glaux maritima, Artemisia maritima, Plantago maritima, Salicornia herbacea, Nuphar luteum, Lysimachia nummularia*, and *Œnanthe fistulosa* noted as growing at Mablethorpe, Tetney, and Saltfleetby]. Nat. World, Oct. 1886, pp. 182-3.

H. Wallis Kew. **Linc. N.**

Notes from the Greensand [at Donington-on-Bain; 27 species of plants noted as observed on 7th July, 1886]. Nat. World, Nov. 1886, iii. 201-202.

H. Wallis Kew. **Linc. N.**

[Agrimonia eupatoria in Grisel-bottom near Louth]. Ent. Mo. Mag., Nov. 1886, xxiii. 136.

H. WALLIS KEW. **Linc. N.**

Field Notes. No. 12. Natural History Odds and Ends [records of *Thalictrum minus*, *Echium vulgare*, *Allium oleraceum*, and *Circæa lutetiana* in Lincolnshire]. Nat. World, Dec. 1886, pp. 221-222.

P. F. LEE. **York S.W.**

Additions to the Dewsbury district-flora [viz., *Brassica nigra*, *Ranunculus Lenormandi*, *Carex pilulifera*, *C. pallescens*, and *C. lævigata*, afterwards incorporated with 'The Flora of Dewsbury and Neighbourhood' in the Trans. Y.N.U., Series E, pp. 225-248]. Nat., Aug. 1884, p. 13.

P. F. LEE. **York N.W.**

The Yorkshire Naturalists' Union at Hawes [28th June, 1884: 238 observations, among which were *Ranunculus cæspitosus* (the mud form of *R. aquatilis*), *Polygonum viviparum*, *Actæa spicata*, *Melampyrum sylvaticum*, *Melica nutans*, and *Asplenium viride*]. Nat., Aug. 1884, p. 18.

P. F. LEE. **York S.E.**

The Yorkshire Naturalists' Union at Spurn Point [3rd Sep. 1884; twelve species of plants new to vice-county No. 61 of 'Top. Bot.' noted, viz. *Erodium moschatum*, *Rosa rubiginosa*, *Artemisia maritima*, *Cuscuta trifolii*, *Hippophaë rhamnoides*, *Atriplex littoralis* and its var. *A. marina* (so proved afterwards; not as stated, *A. Babingtonii* and *A. laciniata*), *Salicornia herbacea*, *Suæda maritima*, *Chlora perfoliata*, *Convolvulus soldanella*, and *Carex arenaria*]. Nat., Nov. 1884, p. 93.

P. F. LEE. **York S.W.**

Yorkshire and Nottinghamshire Naturalists at Anston Stones [30th April, 1885; *Primula variabilis* Goupil., the hybrid often confounded with the true Oxlip of the South-eastern counties, *Daphne laureola*, *Lamium amplexicaule* in bloom, and young plants of *Asplenium adiantum-nigrum*, *Inula conyza*, and *Cystopteris fragilis*; a total of 127 Phanerogams and higher Cryptogams of the London Catalogue of British Plants, observed]. Nat., June 1885, p. 261.

P. F. LEE. **York S.E.**

The Yorkshire Naturalists' Union at Pocklington [24th June 1885; *Geum intermedium*, *Berberis vulgaris*, *Geranium pratense*, *Viola hirta*, *Poterium sanguisorba*, *Origanum vulgare*, *Cornus sanguinea*, *Carex hirta*, *Festuca elatior*, and *Equisetum maximum* noted]. Nat., Aug. 1885, p. 308.

P. F. LEE. **York Mid W.**

The Yorkshire Naturalists' Union at Blubberhouses [26th Sep. 1885; *Corydalis claviculata*, *Rosa mollis*, *R. canina* v. *subcristata*, *Bidens tripartita*, *Sonchus oleraceus*, *Empetrum nigrum*, *Salix pentandra*, *Nephrodium oreopteris*, and *Polypodium dryopteris* noted, also *Calluna*, *Scabiosa succisa* and *Campanula rotundifolia* with white flowers]. Nat., Nov. 1885, p. 381.

P. F. LEE. **York N.E.**

Flora of Strensall and District [adding *Polygala serpyllacea*, *Carex fulva*, *Agrostis canina*, *Cirsium anglicum*, and *Rubus carpinifolius* to A. R. Waller's and H. J. Wilkinson's published lists]. Nat., July 1886, p. 212.

F. ARNOLD LEES. **York N.W.**

Additions to the Wensleydale Flora; Notes Supplementary to Baker's 'North Yorkshire.' . . . First List—Phænogams and Vasculares [29 plants named, with localities, *Sagina ciliata* Fr. and *Agrimonia odorata* being new vice-county records, and the following found at altitudinal ranges extended beyond those given by Baker, viz., *Senecio erucæfolius* L., below Shaw Cote at 700 ft.; *Potamogeton pectinatus* in Semerwater, and *Myosotis palustris* With. on its borders at 700 ft., and *Salix purpurea* half-way up Widdale at 900 ft. alt.]. Nat., Jan. 1885, pp. 134-138.

F. ARNOLD LEES. **Cumberland, Westmorland, Furness.**

[**Review of**] **A Flora of the English Lake District** [with detailed notes on various species of *Viola*, *Myosurus*, *Ononis*, *Rhinanthus*, *Carex*, *Juncus*,

Lotus, *Geum*, *Potamogeton*, *Stachys*, *Sclerochloa*, *Crepis*, *Sagina*, *Trientalis*, *Pyrola*, *Myrrhis*, *Symphytum*, *Polygonatum*, *Allium*, *Rubus*, *Rosa*, and *Hieracium*]. Nat., May 1885, pp. 233-235.

F. A. Lees. **York N.W.**

Wensleydale Botany: Erratum and Additions [the latter are *Viola elatior* and *Allium vineale*]. Nat., June 1885, p. 259.

F. A. Lees. **York N.W.**

More Additions to the Wensleydale Flora [*Sparganium neglectum* Beeby, and *Calamagrostis epigejos*; and note on extension of range of *Iris pseudacorus* a. *genuinus* E. B. Syme; all these forms near Hawes, etc.; the *Sparganium* afterwards proved a form of *ramosum*]. Nat., Aug. 1885, p. 306; and Oct. 1885, p. 341.

F. Arnold Lees. **York N.W., S.W., and Mid W.**

The Yorkshire Bur-Reeds [specimens from Hawes, Methley, Stanley, Sandall, Frizinghall, Shipley, Batley, and Coxley Dam near Dewsbury, supposed to be possibly *Sparganium neglectum* Beeby, proved to be all *S. ramosum*]. Nat., Oct. 1885, p. 341.

F. Arnold Lees. **Derby, Westmld., Lanc. W. and S., Chesh., York S.W., N.W., S.E., Mid W., Cheviotland, Northmbld., Nottingham, Linc. N. and S., Cumberland.**

The Botanical Record Club: Phanerogamic and Cryptogamic [New County Records, additional to 'Top. Bot.' ed. ii., and to previous Reports of the Bot. Rec. Club, also new locality list of species from stations hitherto unpublished within the limits of counties for which already recorded]. Report for the years 1884, 1885, 1886, pp. 81-156.

B. B. LeTall. **Lanc. W.**

[Mercurialis perennis seen near Lancaster, 5th Jan. 1886]. Nat. Hist. Journ., Feb. 15th, 1886, x. 14.

B.B.L[e].T[all]. **York S.E. and Mid W.**

York, Bootham. Natural History Club [noting *Viola palustris* from Hagg Wood beyond Dunnington, *Lamium incisum* (*hybridum*), Heslington, and *Polygonatum multiflorum* from Plumpton Rocks]. Nat. Hist. Journ., June 15th, 1886, x. 102.

B. B. L[e].T[all, Secretary]. **York N.E.**

York, Bootham [accounts of Excursions; Forge Valley, 6th June, *Helleborus viridis*, *Saxifraga granulata*, *Pyrola* (bud), *Trientalis*, *Lathræa*, *Habenaria viridis*, *Lycopodium clavatum* noted; Coxwold and Byland Abbey, *Salix pentandra* and *Ribes alpina*]. Nat. Hist. Journ., Sep. 15th, 1886, p. 126.

B.B.L[e].T[all, Secretary]. **Cumberland.**

York, Bootham. Natural History Club [*Chrysanthemum segetum* flowering as late as last week of October at Allonby]. Nat. Hist. Journ., Nov. 15th, 1886, x. 172.

B.B.L[e].T[all]. **York Mid W.**

Grass of Parnassus [*Parnassia palustris*] 'out of order' [conversion of sepals into petals; Askham Bog, Aug. 28th]. Nat. Hist. Journ., Nov. 15th, 1886, x. 175.

B.B.L[e].T[all]. **York Mid W.**

Double Meadowsweet (*Spiræa ulmaria*) [at Askham Bog, Aug. 21st]. Nat. Hist. Journ., Nov. 15th, 1886, x. 175.

Edward F. Linton. **Westmld., Cumbld., York N.E., S.E., N.W., Cheshire, Durham, Northmbld.**

The Botanical Exchange Club of the British Isles—Report for 1886. pp. 143-166 [numerous records of critical plants for the counties enumerated].

W. Lipscomb. **York S.W.**

Grouse and their Food [on moors about Walsham, Hebden Bridge, *Juncus squarrosus* (named by Editor of Field) is—when seeding—a favourite food]. Field, Oct. 16th, 1886, p. 574.

James Barrie Low. **York N.W.**

[**Lathræa squamaria from Cotherstone,** exhibited to Nat. Hist. Soc. Glasgow, 26th May, 1885]. Proc. Nat. Hist. Soc., Glasgow, 1885-86, New Series, vol. i. p. liv.

P. W. Maclagan. **Cheviotland.**

Corallorhiza innata in Northumberland [correcting an error of localization, the station being really a Berwickshire one]. Nat., March 1885, p. 178.

George Massee. **York N.E.**

The Yorkshire Naturalists' Union at Helmsley [4th Aug., 1884: *Helleborus viridis*, *Actæa*, *Fumaria pallidiflora*, *Parnassia*, *Nasturtium officinale* v. *siifolium*, *Geranium columbinum*, *Rubus saxatilis*, *Rosa systyla*, *Epilobium palustre*, *Scabiosa columbaria*, *Carlina vulgaris*, *Pinguicula vulgaris*, *Anagallis tenella*, *Gymnadenia conopsea*, *Epipactis palustris*, *Blysmus compressus*, *Carex stricta*, *C. ampullacea*, and *Melica nutans* noted]. Nat., Sep. 1884, p. 41.

Geo. Massee. **York N.E.**

The Yorkshire Naturalists' Union at Whitby [3rd Aug., 1885: *Inula helenium*, *Genista tinctoria*, *Vicia bithynica*, *Lathyrus sylvestris*, *Osmunda* (not found), and *Polypodium dryopteris* noted]. Nat., Oct. 1885, p. 349.

George Massee. **Yorkshire.**

On the Structure and Functions of the Subterranean Parts of *Lathræa squamaria* L. [with a casual reference (p. 257) to the conditions influencing its occurrence in some of the Yorkshire hazel-coppices]. Journ. of Bot., Sep. 1886, xxiv. 257-263, and tab. 269.

E. N. Mennell. **York N.W.**

Rarities . . . Teesdale [*Asplenium viride* on top of Mickle Fell, 1886]. Nat. Hist. Journ., Sep. 15th, 1886, p. 129.

R. Morton Middleton. **Durham.**

[**Example of Fasciation in** *Cotoneaster microphylla* grown at Castle Eden]. Proc. Linn. Soc., June 5th, 1884 (published Oct. 1886), p. 15.

C. B. Moffat. **Isle of Man.**

Localities for Dianthus armeria [two places 12 years ago near Castletown, Isle of Man, but one is now destroyed]. Sci. Goss., March 1886, p. 69.

H. Murray and R. S[outh]. **Westmld. and Furness.**

[**Impatiens noli-me-tangere and its occurrence** in Lancashire and Westmorland]. Ent., Oct. 1886, xix. 251-2; Young Nat., Jan. 1887, viii. 15.

C. T. Musson. **Notts.**

[**Exhibition of branch of Blackthorn** (*Prunus spinosa*) obtained near Newark, and showing a curious proliferation of the branchlets]. Proc. Linn. Soc., Nov. 18th, 1886 (pub. July 1887), p. 4.

C. A. Newdigate. **Lanc. W. and S.**

Pimpinella magna in West Lancashire [one of the commonest Stonyhurst plants on both sides of the Ribble, much commoner than *P. saxifraga*]. Journ. of Bot., Oct. 1885, xxiii. 313.

J. J. Ogle. **Notts, Derby.**

The Nottingham Catchfly (*Silene nutans*) [treating of nomenclature, distribution (giving localities briefly), classification and description, fertilization, etc.]. Trans. Nottingham Nat. Soc., 1885, pp. 23-28.

Geo. W. Oldfield. **Westmorland.**

Impatiens noli-me-tangere at Stock Ghyll Force [and *Parnassia palustris* plentiful in the Lake district]. Nat., Aug. 1886, p. 230.

H. Franklin Parsons. **Derbyshire.**

Waterfall [and Rubus chamæmorus plentiful] on Kinderscout, Derbyshire. Nat., Oct. 1886, p. 310.

Ed. Peak. **York S.E.**

Additions to the Flora of the Hull District [*Helleborus viridis*, *H. fœtidus*, *Nymphæa alba*, *Cochlearia danica*, *Capsella bursa-pastoris*, *Senebiera coronopus*, *Silene maritima*, *Montia fontana*, *Geranium lucidum*, *Erodium maritimum*, *Ilex aquifolium*, *Acer campestre*, *Sarothamnus*, *Trifolium medium*, *Lotus major*, *Orobus tuberosus*, *Rubus rhamnifolius*, *Rosa mollissima*, *Pyrus aria*, *Cornus sanguinea*, *Asperula odorata*, *Fraxinus*, *Limnanthemum nymphæoides*, *Cuscuta trifolii*, *Orobanche major*, *Beta maritima*, *Parietaria diffusa*, *Pinus sylvestris*, *Luzula sylvatica*, and *Asplenium ruta-muraria*; localities stated]. Nat., March 1886, p. 100.

E. A. Peak. **York S.E.**

The Re-Afforesting of London [stating the failure of plane-trees to survive the winter at Hull]. Sci. Goss., Dec. 1886, p. 265.

W. Pengelly. **North Riding.**

An Even-Ash [a charm used in the North Riding of Yorkshire; copied from Athenæum, Nov. 7th, 1846, pp. 1142]. Journ. of Plymouth Inst., 1878-79, vii. 142.

G. H. Philipson. **Northumberland S., Cumberland.**

Address to . . . the Tyneside Naturalists' Field Club, read . . . 19th May, 1885 [*Rubus chamæmorus* noted on Cross Fell, 25th June, 1884; *Trollius* and *Crataegus* at Slaggyford, on South Tyne; *Saxifraga aizoides*, abundant at Gilsland, 16th July, 1884]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 8, part 2, 1886, pp. 283, 284, and 286.

W. H. Purchas. **Derbyshire.**

Some more Notes on Dovedale Plants [detailed notes, treating of about 140 species, including numerous forms of *Rubus*, *Rosa*, *Hieracium*, and *Salix*]. Journ. of Bot., June and July, 1885, xxiii. 181-184, and 196-203.

Geo. Reed. **York Mid W. and S.W.**

Influence of Soil on Plant Colouring [as observed near Leeds; general statements only]. Nat. World, Aug. 1886, iii. 160.

L. R[ichardson]. and B. B. L[e]. T[all]. **York N.E. and N.W.**

York, Bootham [Excursions: to Castle Howard; 14 plants noted, some by English, others by scientific, names, and to Wensleydale, three noted]. Nat. Hist. Journ., June 15th, 1886, x. 102.

H. N. Ridley. **Cumberland or Westmorland.**

Notes on British Rubi [*Rubus rhamnifolius* at Watermillock and near Ulleswater and Haweswater]. Journ. of Bot., Dec. 1885, xxiii. 370.

Geo. Roberts. **York S.W., S.E., N.W., and Mid W.**

Dispersion of Plants in Yorkshire: Notes on Aliens and Casuals recently observed in the Wakefield District [a list of exotics and casuals, with a number of infrequent wild plants, chiefly from waste ground]. Nat., Dec. 1885, pp. 389-393.

George Roberts. **York S.E.**

Mollusca [and a few Plants] of Wressle and Neighbourhood [*Conium maculatum*, *Chenopodium bonus-henricus*, *Dipsacus sylvestris*, *Zannichellia palustris*, and *Hedera helix* noted]. Nat., Oct. 1886, pp. 311-312.

M. H. Robson. **Northumberland S.**

Additions to the Local Fauna and Flora, with Remarks on some New Habitats, etc. [*Hydrocharis morsus-ranæ* noted as still abundant near Ryton Station and as not found elsewhere in the district; and *Cystopteris dentata* (new to Northumberland) and *C. fragilis* as growing freely near Crag Lough in 1877]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 8, Part 2, 1886, p. 189.

T. Rogers, Hon. Sec. **Cumberland.**

Manchester Cryptogamic Society [; exhibition of wild Cumberland specimens of *Asplenium lanceolatum*]. Nat., Sep. 1884, p. 36.

Thomas Rogers, Sec. **Westmorland.**

Manchester Cryptogamic Society [three notes; *Nephrodium montanum* and *Lastræa filix-mas* (varieties, Patterdale), and *Asplenium trichomanes* var. *incisa* (Westmorland), noted]. Nat., June 1885, p. 259.

Thomas Rogers, Secretary. **Westmorland.**

Manchester Cryptogamic Society, September 21st, 1885 [a striking var. of *Lastræa filix-mas* (section *propinqua*) near Patterdale, exhibited]. Nat., Feb. 1886, p. 60.

W. Moyle Rogers. **Derbyshire.**

Notes on the Flora of Buxton [, Derbyshire; supplementary to those by W. Hunt Painter (1881) and J. G. Baker (Jan. 1884), and based on notes made Aug. 8th to Sep. 8th, 1884, in the immediate neighbourhood of Buxton; 124 species referred to, including numerous forms of *Rubus* and *Rosa*]. Journ. of Bot., March 1885, xxiii. 76-80.

R. A. Rolfe. **Notts.**

Notes on the Flora of Nottinghamshire [deals with the Bibliography of the subject, the division of the county into natural geological districts (five), and suggests the accumulation of materials for a new Flora]. Trans. Nottingham Nat. Soc., 1885, pp. 29-32.

J. H. Salter. **York Mid W.**

Ingleboro' [Parsley Fern (*Cryptogramme crispa*) and Limestone Polypody (*Polypodium calcareum*)]. Nat. Hist. Journ., Dec. 15th, 1886, x. 194.

J. H. S[alter]. **York N.W.**

Wensleydale, Yorks. [*Saxifraga aizoides* at Whitfield Gill]. Nat. Hist. Journ., Dec. 15th, 1886, x. 194.

J. Sang. **Durham?**

[**Artemisia maritima near the sea,** in the Tees estuary near Redcar; (locality probably wrong; see next title)]. Ent. Mo. Mag., Oct. 1885, xxii. 99.

John Sang. **Durham, Northumberland S.**

[**Artemisia maritima in Salt Marshes at the Tees mouth,** near Greatham: *Potentilla tormentilla* near Newcastle-on-Tyne]. Young Nat., Jan. 1886, vii. 2 and 3.

J. Sang. **Durham or Yorkshire, Isle of Man.**

[**Lotus corniculatus near Darlington and in Isle of Man**]. Ent. Mo. Mag., March 1886, xxii. 239.

J. Sang. **Durham.**

[**Prunus padus and Pyrus aucuparia in** Upper Weardale and near Darlington]. Ent. Mo. Mag., April 1886, xxii. 262.

M. B. Slater. **York N.E. and S.E.**

Botanical [Report for 1885-86; giving detailed accounts of the explorations of 1885 in N.E. and S.E. Yorkshire; numerous species mentioned]. Third Ann. Rep. Malton Nat. Soc., 1885-6 (pub. 1886), pp. 8-9.

M. B. Slater. **York S.E.**

The Yorkshire Naturalists' Union at Flamborough Head [14th June, 1886; *Crataegus* late in bloom; *Aquilegia vulgaris, Cochlearia officinalis, Spiræa filipendula, Campanula glomerata, Myosotis sylvatica, Plantago maritima, P. coronopus, Armeria maritima, Orchis morio, O. mascula, O. maculata, Fritillaria meleagris* noted; the Rev. E. M. Cole reported a *Saxifraga granulata* at Towthorpe-on-the-Wolds]. Nat., July 1886, p. 217.

M. B. Slater. **York N.E.**

The Yorkshire Naturalists' Union at Pickering [Aug. 1886; *Cornus suecica*, two *Ericæ*, *Calluna*, three *Vaccinia*, *Empetrum*, *Myrica*, *Drosera rotundifolia*, *Genista anglica*, *Pinguicula*, *Thalictrum flavum*, *Aquilegia*, *Arabis hirsuta*, *Reseda luteola*, three *Hyperica*, *Ononis arvensis*, two *Loti*, *Prunus padus*, *Agrimonia eupatoria*, *Lythrum salicaria*, *Epilobium angustifolium*, *Hydrocotyle vulgaris*, *Conium*, three *Cardui*, *Serratula tinctoria*, *Achillea ptarmica*, *Gnaphalium sylvaticum*, *Senecio aquaticus*, *Inula conyza*, *Tragopogon pratensis*, *Lactuca muralis*, *Crepis paludosa*, *Campanula latifolia*, *Linaria minor*, *Veronica buxbaumii*, *Scutellaria galericulata*, *Echium vulgare*, *Lithospermum officinale*, *Myosotis sylvatica*, two *Lysimachiæ*, *Anagallis tenella*, *Triglochin palustre*, *Orchis pyramidalis*, *Gymnadenia*, *Listera ovata*, and *Epipactis latifolia*]. Nat., Sep. 1886, p. 274.

H. T. Soppitt and W. West. **York Mid W. and S.W.**

Plants of the Bradford District [being records—with localities—for *Polygonatum officinale*, *Genista anglica*, *Myriophyllum verticillatum*, two *Medicagines*, six *Rubi*, and *Lastræa spinulosa*]. Nat., March 1885, p. 178.

H. T. Soppitt and W. West. **York Mid W. and S.W.**

Bradford Naturalists' Society—A Year's Botanical Work [*Bupleurum rotundifolium*, *Lathyrus hirsutus*, *Medicago falcata*, *Agrostis spica-venti*, *Ranunculus sceleratus*, *Colchicum autumnale*, *Calamintha acinos*, *Listera cordata*, *Scirpus sylvaticus*, *Juncus compressus*, *Carex ampullacea*, *C. rigida*, and *Melica nutans* noted]. Nat., Feb. 1886, p. 60.

Richard South. **York N.E. or Durham.**

President's Address [refers to *Artemisia maritima* in salt marshes near Redcar (? Greatham), in July, as food-plant of *Gelechia tetragonella* Stn.]. Proc. South London Ent. and Nat. Hist. Soc. for 1885 (pub. 1886), p. 17.

Alexander S. Stevenson. **Cumberland, Northumberland S.**

Address to . . . the Tyneside Naturalists' Field Club, read . . . May 23rd, 1884 [*Vaccinium uliginosum*, *Genista anglica*, *Pyrus malus*, noted as observed at Talkin Tarn, 28th May, 1883; *Malaxis* missed, but *Orchis maculata* observed at Muckle Moss near Crag Lough, 16th July, 1883; and Pendulous Rush noted at Morpeth, 5th October, 1883]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 8, part 2, 1886, pp. 226, 233, and 238.

F. C. Birkbeck Terry. **York North Riding.**

Parsley Seed Folk-lore [there is a saying in the North Riding that 'parsley seed (when it has been sown) goes nine times to the devil'; bibliographical references are given, which see]. Notes and Queries, June 13th, 1885, 6th Series, xi. 467.

H. S. Thompson. **York N.E.**

Scabiosa [**succisa**; **a monstrosity** found at Strensall; central flower without a stem, etc.]. Nat. Hist. Journ., Nov. 15th, 1886, x. 175.

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John Vicars. **Furness, Cheshire.**

Botanical Résumé [an account of the plants met with on the Liverpool Nat. Field Club excursions in 1885: at Humphrey Head, Sept. 3rd, being the only one within our scope; confirmation of *Hyoscyamus niger* as a Cheshire plant]. Proc. Liverp. Nat. Field Club for 1885-86 (pub. 1886), pp. 30-35.

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E. W. WADE. **York S.E.**

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A. RAINEY WALLER. **York S.W., Lancashire S.**

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W. WEST. **Westmorland.**

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WILLIAM WHITWELL. **York Mid W.**

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C. F. W. T. WILLIAMS. **North of England.**

Studies of Common Plants. No. iv. [mentions that in the North of England *Glechoma hederacea* is 'credited with a fair share of medicinal properties']. Sci. Goss., Feb. 1886, p. 30.

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